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THE QUESTION OF A DIVISION OF THE PHILOSOPHICAL FACULTY.

INAUGURAL ADDRESS

ON ASSUMING THE RECTORSHIP OF THE UNIVERSITY OF BERLIN,

DELIVERED IN THE AULA OF THE UNIVERSITY
On October 15, 1880,

BY

DR. AUGUST WILHELM HOFMANN,
PROFESSOR OF CHEMISTRY.

SECOND EDITION,

WITH AN APPENDIX

CONTAINING

TWO OPINIONS ON THE ADMISSION TO THE UNIVERSITY OF GRADUATES OF *REALSCHULEN*, PRESENTED TO HIS EXCELLENCY, THE ROYAL MINISTER OF PUBLIC INSTRUCTION, BY THE PHILOSOPHICAL FACULTY OF THE ROYAL FREDERICK-WILLIAM UNIVERSITY, IN THE YEARS 1869 AND 1880.

BOSTON:
PUBLISHED BY GINN, HEATH, & CO.
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INTRODUCTION.

The Inaugural Address of Professor Hofmann, the distinguished Professor of Chemistry in the University of Berlin, which is here translated, deals chiefly with a question which excites great interest and no little controversy in the German Universities, and will, it is hoped, interest all in this country who are devoted to the educational problems of the day. The question of dividing the great Philosophical Faculty, which has long been the pride of the German University, collecting and cherishing all the numerous Sciences which do not belong to Theology, Law, or Medicine, and of putting in its place one Faculty of Letters and one of Mathematics and the Physical and Natural Sciences, is a question which cuts deeply into the very fibre of modern education; and the action of Germany in dealing with it cannot fail to be weighty and lasting in its effect on the education of the world. This Address, however, as Professor Hofmann remarks, owes its general interest mainly to its discussion of a question closely connected with the principal subject, — that of admitting students to the Universities without the literary training which a German *Gymnasium* affords, and especially without a knowledge of Greek. The history of this question in Germany, particularly the active part taken in it by the University of Berlin, may be new to many in this country who are interested in the future of classical studies.

A decree, issued at Berlin on December 7, 1870, by the Royal Minister of Public Instruction, Dr. von Mühler, granted to sub-

jects of Prussia who had completed the full course of study in a *Realschule* of the first rank the right of matriculation in the Philosophical Faculty of any Prussian University, for the purpose of studying Mathematics, the Physical and Natural Sciences, or Modern Foreign Languages. By this removal of restrictions which heretofore had practically barred the way to University studies for those who had not received their preparatory training at a *Gymnasium*, a new set of requisitions for admission was recognized, and a new element was introduced into the Universities. The Prussian *Realschule* of the first rank, as compared with the *Gymnasium*, entirely dispenses with Greek in its course of study, reduces the time devoted to Latin by very nearly one-half, introduces English, gives greater attention to German, doubles the time devoted to French, more than doubles that given to the Physical and Natural Sciences, and increases that allotted to Mathematics by nearly one-half.[1]

The decree of 1870 had been preceded in 1869 by a note, addressed by the Minister of Public Instruction to the Faculties of the various Universities in Prussia, asking their opinion upon the question whether young men who had received their preparatory training in a *Realschule* should be admitted to the Universities, and, if they were admitted, under

[1] The following tables, extracted from Wiese's *Verordnungen und Gesetze für die höheren Schulen in Preussen*, second edit., 1875, pp. 38 and 44, will furnish the means for a more specific comparison, and show at the same time what is the *Realschule*, to the training of which the Berlin Faculty object. The German boy regularly has completed his ninth year when he enters the sixth and lowest class of the *Gymnasium* or *Realschule*. He leaves it regularly at eighteen. In the following tables, I. and II. and generally III. represent two years' study each ; the others represent single years : —

what restrictions this should be done. The answers, taken as a whole, were distinctly opposed to the Minister's implied pro-

General Plan of Studies of the Prussian Gymnasium.

	VI.	V.	IV.	III.	II.	I.
Religion	3	3	2	2	2	2
German	2	2	2	2	2	3
Latin	10	10	10	10	10	8
Greek			6	6	6	6
French		3	2	2	2	2
History and Geography	2	2	3	3	3	3
Mathematics	4	3	3	3	4	4
Physics					1	2
Natural History	2	2		2		
Drawing	2	2	2			
Writing	3	3				
Total number of hours in each week	28	30	30	30	30	30

General Plan of Studies of the Prussian Realschule of the First Rank.

	VI.	V.	IV.	III.	II.	I.
Religion	3	3	2	2	2	2
German	4	4	3	3	3	3
Latin	8	6	6	5	4	3
French		5	5	4	4	4
English				4	3	3
Geography and History	3	3	4	4	3	3
Physical and Natural Science	2	2	2	2	6	6
Mathematics	5	4	6	6	5	5
Writing	3	2	2			
Drawing	2	2	2	2	2	3
Total number of hours in each week	30	31	32	32	32	32

No account is taken in the above plans of the hours given to Singing and Gymnastics, or to Hebrew in the *Gymnasium*. The time so devoted falls either wholly or in part outside of the regular school hours.

posal. The decree was nevertheless issued, and went into immediate effect. The reply of the Philosophical Faculty at Berlin is given in the Appendix (pages 39–43 of this translation).

The interest in the experiment thus set on foot was not confined to Prussia. For the proposition that the study of the Classics is the best preparatory training for the higher studies of the University has been widely combated. This question has been for years the subject of lively discussion in our own country, where there have not been wanting doubters who have assailed the value of the Classics, and especially of Greek, as an educational instrument, sometimes with fierce impatience, sometimes with clever derision. It is, therefore, a fact of the highest interest and importance, that this experiment of admitting students to the University without Greek has been tried for ten years in the foremost University of Germany, and that we have a unanimous opinion of the Philosophical Faculty of that University upon the change, deliberately given at the end of this period. It is especially interesting to all friends of classical studies to find that the emphatic condemnation of the change which was expressed by the Faculty when it was proposed in 1869 is reaffirmed in still stronger terms by the Faculty of 1880. And what an array of names famous in all the various departments which Germany includes in her hospitable "Philosophische Facultät" — in the Physical and Natural Sciences, History, Philology, and Literature, as well as in Philosophy proper — is appended to these memorials! As the Rector reminds his readers, death had reaped a sad harvest between 1869 and 1880 among the distinguished men who

signed the first Opinion, and the Faculty had been largely recruited by the introduction of younger men. The names of Dove, Haupt, Magnus, von Raumer, Rose, and Trendelenburg have disappeared, and the Faculty appears much increased in numbers in 1880. But the views of the Faculty of 1869 still remain those of the Faculty of 1880.

This Opinion of 1880 (pages 47–56 of this translation), which a distinguished American scholar has forcibly called "the most powerful plea ever made in behalf of classical studies," was first made public in 1881, as an appendix to the second edition of Professor Hofmann's Address. In the Address itself, Dr. Hofmann presents, with great clearness and vigour, the claims of the *Gymnasium* as affording the best means of preparation for higher studies. It is deeply significant that a scholar of such authority, a scholar who has made his great achievements mainly in the field of the Physical Sciences, should announce his unhesitating belief "that all efforts to find a substitute for the Classical Languages, whether in Mathematics, in the Modern Languages, or in the Natural Sciences,[1] have been hitherto unsuccessful; that, after long and vain search, we must always come back finally to the result of centuries of experience, that the surest instrument that can be used in training the mind of youth is given us in the study of the languages, the literature, and the works of art of classical antiquity."

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[1] Throughout this translation the word *Naturwissenschaften* has been rendered *Natural Sciences*. It is a term of broad application, covering what would be more accurately designated as the Physical and Natural Sciences.

The present translation, which is published with the consent and approval of the author, was begun last winter, but circumstances have delayed its appearance until now. It was made in the first instance by Henry A. James, Esq., of New York. It then became my pleasant duty to read the proofs, and this I have done with no less care than interest. We have aimed to render the Address and the two Opinions into English with strict accuracy; and in the Notes, which involve much that is technical and difficult of expression, we have besides made especial effort to use terms that shall be easily intelligible.

JOHN WILLIAMS WHITE.

CAMBRIDGE, October, 1883.

PREFACE.

THE author of the Inaugural Address which is now republished, though it has appeared previously either entire[1] or in part[2] in periodical publications, labours under no misapprehension of the circumstances to which it owes the honour of a second edition. It is not the subject of the Address itself which has awakened interest in wider circles, but a question standing in close connection with this subject, though only subordinately touched upon in the Address, and that is, whether the *Realschule* of the first rank affords as advantageous a preparation as the *Gymnasium* for University studies. The author, relying upon his own experience, has answered this question decidedly in the negative.

That there are many who do not share his opinion is a fact of which he has been made aware in no doubtful manner by the thorough discussion which the matter has received in the public press. From all directions and in the most varying forms, the cause of the *Realschule* of the first rank has been taken up with great vigour, and statistics have been adduced to place in the most favourable light the results of the preparation afforded by it for University studies. Moreover, party zeal has been by no means confined to those immediately interested in

[1] La Question du Sectionnement de la Faculté Philosophique. Revue Internationale de l'Enseignement. Réd. par M. Edmond Dreyfus-Brissac. I. 152.

[2] Zeitschrift für das Gymnasialwesen, XXXV. p. 1. Berlin: 1881.

the *Realschule*, who, we may say, enter the lists *pro domo;* but in the heart of the Universities themselves influential voices have taken up the argument in favour of the *Realschule* system of instruction.

In view of so many concurrent expressions of opinion, one might almost suppose that the conclusion to which the author has been led by his own experience is shared by but few. Under these circumstances it seems desirable that wider circulation should be given to the views which the Faculty of the University in this city expressed on an earlier occasion, and which they have recently reaffirmed.

When the Philosophical Faculty of this University in the year 1869, in common with the Faculties of all other Prussian Universities, was called upon by His Excellency, Herr von Mühler, Minister of Public Instruction, "To report whether and to what extent graduates of *Realschulen* should be admitted to the departments of the Universities," it declared itself most decidedly opposed to such admission. This declaration has been made public in the official printed copy of the Opinions rendered at that time.[1]

In the beginning of the past year the Faculty took up this subject anew, induced thereto by a motion offered by one of its members, Professor Droysen. The motion proposed by that gentleman under date of December 18, 1879, and strongly supported both by statistics and by a clear presentation of all the facts,[2] runs as follows: —

"To present to his Excellency, the Minister of Public Instruction, the request that he subject to renewed consideration the question of the further admission of graduates of *Realschulen* to the University."

[1] Akademische Gutachten über die Zulassung von Realschul-Abiturienten zu Facultäts-Studien. Berlin: 1870.

[2] For the following statistical reports, which have been made somewhat more complete, I am indebted to the kindness of Herr Kanzleirath Skopnik,

The Faculty could not refuse to consider the question so earnestly presented by Droysen, and immediately commissioned

who very obligingly compiled them from the records of our University. They furnish unmistakable proof that the preparatory training for the University is to-day essentially different from what it was a few years ago.

Total number of Prussian Students in the Philosophical Department in Berlin who had Diplomas from Preparatory Schools.

	Total.	With a *Gymnasium* Diploma.	With a *Realschule* Diploma.	Percentage of *Realschüler*.
Winter-Sem. 1875–76	616	465	151	24.51
" " 1876–77	749	544	205	27.37
" " 1877–78	818	580	238	29.09
" " 1878–79	976	664	312	31.96
" " 1879–80	1167	762	405	34.70

From these figures it appears that the number of *Realschüler* among the Prussian students in Berlin who had diplomas rose in five years from 24.5 to 34.7 per cent. A still more striking result is shown if we compare with one another the numbers of the new matriculates from the *Gymnasia* and the *Realschulen* in each *Semester*.

Number of Prussians newly matriculated in the Philosophical Department of the University of Berlin on presentation of a Diploma.

	With a *Gymnasium* Diploma.	With a *Realschule* Diploma.	Proportion of *Gymnasiasts* to *Realschüler*.	
			Gymnasium.	*Realschule.*
Winter-Sem. 1875–76	152	56	100	36.8
" " 1876–77	187	59	100	31.5
" " 1877–78	188	76	100	40.4
" " 1878–79	229	98	100	42.8
" " 1879–80	230	144	100	62.6

For every one hundred students from the *Gymnasium*, there are to-day almost twice as many graduates of *Realschulen* as there were four years ago.

the Dean, Professor Hübner, to call upon all the Instructors in the Philosophical Faculty to report the results of their experience in respect to the subject under discussion. The rich material thus collected was thoroughly discussed and sifted by the Faculty in a number of meetings. Professor Zeller finally undertook to incorporate the new points of view into the motion of Droysen, and the Memorial, as revised by him and addressed to His Excellency, Herr von Puttkamer, Minister of Public Instruction, was *unanimously* adopted by the Philosophical Faculty in their session of March 8, 1880. This document, the contents of which undoubtedly seem fitted to throw light upon the question under discussion, has not up to this time been made public.

The reprinting of my Inaugural Address, which was mainly instrumental in bringing the question prominently before the public again, offered a welcome opportunity to give the Memorial addressed by the Faculty to his Excellency, the Minister, wider circulation. Since, however, the writer of a letter, as well as the recipient, should consent to its publication, the author first of all asked permission of the Faculty to have the document printed with the new edition of this Address. The Faculty granted the request with the greatest readiness and without a dissenting voice; and it, moreover, addressed a request at the same time to His Excellency, the Minister, that he should give his consent to the publication of the Memorial, which he did immediately with the greatest kindness.

It seemed proper to publish the earlier Opinion of the Philosophical Faculty along with the later. Since the publication of the first Opinion death has reaped a sad harvest in our Faculty. The Faculty has been to a great extent renewed by the entrance of a large number of younger members. But the views which the Faculty of 1869 expressed are still the views of the Faculty of 1880.

AUG. WILH. HOFMANN.

BERLIN, July 1, 1881.

THE QUESTION OF THE DIVISION OF THE PHILOSOPHICAL FACULTY.

To the Philosophical Faculty by its nature is entrusted the Palladium of our strivings after the Ideal, the culture of pure Science, the representation of these before the outside world, and when occasion requires before the government; and it is eminently fitting and beautiful to see spiritual impulses and forces, otherwise most dissimilar, marshalled as watchmen under such a standard.

E. DU BOIS-REYMOND.

GENTLEMEN : —

ON the threshold of the new scholastic year I extend greeting and good wishes to my colleagues and fellow-students. May this year of study bring us profit in our labours !

I need not repeat the assurance which I have already given that I shall conscientiously try to administer the honourable office entrusted to me to the best of my ability ; but will ask your permission, following the traditions of our University, to introduce myself to you by the discussion of a question connected with the constitution of the universities.

On casting my eyes about in search of a theme whose treatment would find room within the narrow limits offered by to-day's ceremony, a question suggested itself to my mind which has come to the surface more than once in the course of the last ten or twenty years, and the discussion of which has awakened a certain commotion in academic circles. This question, to be sure, concerns immediately only the philosophical faculty ; but when we consider how large the membership is in this faculty, that in most of our universities it is at least equal to the entire membership of all the other faculties, and in many, as for instance in our own, considerably greater, — and if we reflect further how manifold the relations are which centre in the philosophical faculty, we cannot avoid conceding to it an exceptional position. If, however, there should be any unwillingness to make such a concession, nevertheless, confident as I am that all who belong to the *Universitas* feel themselves to be members of one great whole, I cherish the hope that when I attempt to throw light upon a question which concerns the organization of the philosophical faculty, the members of the other faculties also, as

well as my fellow-students in all departments, will not refuse to lend me a friendly ear.

The question to which I wish to turn your attention for the moment is this: "Does the philosophical faculty, with its diversified structure and its daily increasing membership, still answer the needs of the times; or, in view of the variety of branches of science represented in it, is a separation into two or more faculties to be recommended?" Moreover, we shall not be able to deny that this question has a practical importance, when we learn that so far from belonging still exclusively to the domain of speculation it has already entered upon the stage of experiment, such a division having been, in fact, accomplished at two German universities.

Why is it that the philosophical faculty specially should be deemed in need of such a reform? The answer to this question is given in the exceptional position of the philosophical faculty already pointed out; for it has not, up to this time, occurred to any one to divide the theological faculty, or the faculty of law, or that of medicine. The growth of the three faculties just named has in course of time been much less than that of the philosophical faculty. If we cast a glance over the statistics of our own university, we find that since its foundation the membership of this faculty has almost trebled, while that of all the other faculties taken together has scarcely more than doubled.[1] We meet a similar difference in growth in other universities. This difference has its foundation in the special tasks of the several faculties. The faculties of law, theology, and medicine belong to science in the service of practical life; they are always, by preference at least, devoted to the teaching of applied science. The philosophical faculty is the faculty of science free and untrammelled; its efforts are immediately directed to teaching science for its own sake. Hence it is that the tasks of the faculties of theology, law, and medicine, however great and various they may appear, and however important for the welfare

of mankind, nevertheless, for the very reason that they are devoted in the first instance to practical aims, are confined within certain fixed boundaries, while the domain of theoretical investigation of the philosophical faculty, mind and nature, knows no limits. This twofold domain has been built upon very differently at different times. In former centuries the deductive sciences enjoyed preponderant care and attention. It has been reserved for our own century to unfold, by the side of these, the inductive or natural sciences to unanticipated fulness. But since now this very growth of the natural sciences, and the representation of their single divergent branches in the philosophical faculty, have contributed essentially toward widening its limits, it cannot cause us any astonishment that it is the natural sciences which demand a release from the union, as a colony grown great and powerful desires to sever the tie which binds it to the mother country.

Additional and substantial force is lent to this demand by the importance, we might say the position of authority, which the natural sciences have assumed in industry, in the arts and manufactures, outside of the academic circle where they are cultivated exclusively in the investigation of truth. In all fields of human activity we meet with the useful application of the acquisitions of natural science, and its utilization for the development of practical life is accomplished with such rapidity that a dream in physics or chemistry often seems to be realized before it is fully dreamed out. No wonder that the representatives of these sciences, which have shown themselves serviceable to the material welfare of mankind to a degree scarcely approached by any others, find the question urging itself upon them, whether the time has not come, in view of this present development, for them to step out of the position they have hitherto occupied in the philosophical faculty in order to construct a faculty of their own.

Efforts in this direction do not date from to-day nor from

yesterday. They appear at an early period, in fact, almost at the same time with the first beginnings of natural science studies in our universities. So far as my own information extends, the cause of the natural sciences was first espoused by the celebrated publicist, Robert von Mohl, in Tübingen, nearly half a century ago. "The number of faculties," says von Mohl in his *Polizei-Wissenschaft*,[2] "is regulated by the extent to which the sciences are taught at the university, and is consequently by no means unchangeable. If one science reaches such development within and without that it requires a greater number of instructors, and forms an existing department of study in itself, an appropriate faculty must be established for it." And he adds further: "The time may not be far off when the natural sciences also will everywhere be organized as a special department with its own faculty."

It has, however, required considerable time for this expectation to reach fulfilment even in modest measure. To be sure, in the course of years, the transformation of the philosophical faculty has been repeatedly the subject of advisement at different universities, but it has been impossible to arouse any enthusiasm in its behalf. Thus at an early period, at the little University of Giessen, where toward the middle of the century a large circle of young investigators had gathered about the powerful personality of Liebig, various negotiations were carried on directed toward a division of the faculty, although not until Liebig had removed to Munich. A separation of the natural science branches had been suggested by the Hessian government. The faculty replied that a division into two parts did not seem desirable; that, if any change should be decided on, a division into three parts would perhaps be preferable. They finally decided, however, in favour of the existing unity.[3] About the year 1860 the idea of division was first taken into serious consideration at Tübingen, that is, at the same university in which the notion originated; and finally, in the year 1863, it was

carried out. The philosophical faculty retained its name; to the faculty of natural sciences were assigned the chairs of mathematics and astronomy, of physics, of pure and applied chemistry, of mineralogy and geology with palæontology, of botany, of zoölogy and comparative anatomy, and of pharmacology. The newly established faculty of the natural sciences came into existence at the beginning of the winter-semester of the same year under the chairmanship of its first dean, the botanist Hugo von Mohl, a brother of the publicist already mentioned. We learn from the document published on this occasion,[4] that the first inducement to this innovation was a proposal on the part of the medical faculty, which was accepted only after an obstinate struggle between the faculties concerned.[5] It is worthy of notice that the philosophical faculty of that time pronounced itself as a whole repeatedly and in the most decided manner against the plan, although all its members who represented natural science branches had voted in favour of separation and union with the natural science members of the medical faculty. Not until after the academic senate advocated the forming of a new faculty did the government take the decision of the question into its own hands.[6]

Hugo von Mohl, who formally opened the new faculty with an address on October 29, 1863, evidently entered upon the office fully convinced of the wisdom of the innovation, for he concluded his speech with an admonition directed to the German universities, "not to remain behind the times, to recognize the importance which the natural sciences had attained, and to concede to them a position of independence corresponding to their importance and conducive to their further development."

"That we have attained this," he exclaims in closing, "is proved by the fact that I speak to you to-day from this place. The establishment of the faculty of natural sciences means a break with the medieval view that culture can be found only in

humanitarian studies, it means the recognition of the fact that the natural sciences have grown up to an equality with other sciences, the recognition of the fact that they must pursue their special purpose in their own way, and the assurance that they may strive toward the accomplishment of this purpose without being led astray by foreign influences. Let us express our thanks to the intelligence of our government, which is the first in Germany to have broken with the old prejudice, and let us call to our sister universities: Follow us!"

The sister universities, however, have not responded to this call. Some of them indeed, in consequence of the action of Tübingen, have taken the question of the division of the faculty into consideration, but further than that they have not gone. An interrogation addressed to the Vienna philosophical faculty by the Austrian government shortly before the year 1870 led to a thorough discussion of the question; this numerous body expressed itself by a large majority against division.[7] In Breslau also division was the subject of lively discussion for years, without resulting in any reconstruction of the faculty.[8] In Kiel and in Königsberg propositions for a division have been likewise without result.[9] The results of deliberations in Munich, and later also in Würzburg, which have not led to an imitation of Tübingen, I shall consider particularly hereafter.

But the mighty stream of events which has poured over our country since that time has added a younger sister to our circle.

On the occasion of the revival of the University of Strassburg under Roggenbach's wise and clear-sighted guidance, the question of fixing the boundaries of the faculties was the subject of long and careful deliberation, and it will always appear an important step, that there, after the expiration of a year, it was decided to follow the example of Tübingen and to abandon the traditional organization of the philosophical faculty which had been first adopted. In addition to its philosophical faculty the

new Strassburg University has a faculty [10] of mathematics and the natural sciences.

When we enter upon the discussion of this question, we certainly must not undervalue the example of the University of Strassburg. Those who had the organizing of the new school were scarcely trammelled at all by arrangements existing at the time of its revival; they might select the one or the other form according as they deemed one or the other better adapted to their purpose. They decided finally in favour of the system of division which had been introduced at Tübingen. But at the same time we must not attach too great importance to this decision, on the one hand, because it was more a question of entirely new creation than of reconstruction, and, on the other hand, because in this case it seemed fitting to maintain the traditions of the French period. Even if we are compelled to admit that under the circumstances Strassburg chose the better part, it would not follow that it would be expedient likewise to reconstruct the already existing united philosophical faculties in accordance with the example of Tübingen.

On the other hand, the changes which have been accomplished meanwhile in Munich, and in a more limited degree in the Würzburg philosophical faculty, have a very special bearing upon the discussion of the question which occupies us. In Munich the question of the division of the faculty, suggested perhaps by its large membership, was taken into consideration very soon after Tübingen had led the way. The division, however, was never made. The faculty has been maintained in its entirety, and appears so in its catalogues. It is divided, however, into two sections, a section of philosophy, philology, and history, and a section of mathematics and natural sciences, each of which holds separate sessions under its own dean. In these sessions all the business relating to the respective sections is transacted. Only when questions arise which concern the common affairs of the faculty are their deliberations carried on

in a joint session, in which the dean who has served longest occupies the chair.[11] A similar arrangement has prevailed in Würzburg since the middle of the last decade, though there both sections have only one dean, who is chosen alternately from each.[12] This division of the faculty, preserving its unity, recalls in some measure the arrangements which exist in various Academies of Arts and Sciences, especially our own.

The practical results gathered in Tübingen and Strassburg, as well as in Munich and Würzburg, since the introduction of the new order of things, have been hitherto only sparingly communicated by those who are able to speak with authority, that is, by members of the faculties which have undergone the change. With the exception of a very noteworthy article by Paul du Bois-Reymond, professor of mathematics in Tübingen, who moreover pronounces decidedly in favour of the unity of the philosophical faculty,[13] I am acquainted with no publication, up to this time, which touches upon these practical results.

In view of the differences in the conditions under which the division of the faculty has taken place at the four universities mentioned, and in the absence of thorough information concerning its results, a purely academic treatment of the question seems for the present advisable; one which, disregarding every precedent, shall discuss only the reasons which have been or which can be adduced in favour of separation, or in favour of the continuance of the philosophical faculties in their unity. In this discussion, however, we must not lose sight of the practical conditions, and especially of the fact that the several universities show considerable differences in their internal organization, — for example, many have the so-called Great Senate, which has jurisdiction in general university matters. These special arrangements cannot be without substantial influence on the general question. It is to be understood then, once for all, that in the argument which I am about to enter upon I make

the existing arrangement in the majority of the North German universities my starting-point.[14]

If we ask what grounds are adduced for the separation, the supporters of the movement generally point first of all to the advanced development of the natural sciences and to the number of special courses which are already represented or which will be so in the immediate future; they say that such a body of sciences can no longer be denied the recognition of its independence; that the grouping of the natural sciences with the so-called mental sciences, whose representatives build upon a domain of study so entirely distinct and pursue methods so essentially different, must exert an obstructive influence upon the development of the former, and cannot be in any way advantageous to the latter.

These hints may suffice to indicate the general line of attack chosen by the champions of division. As to special arguments, they point in the first place to the injury which, as they affirm, accrues to the natural sciences from the composite constitution of the united philosophical faculty; they say that, in the present condition of things, the decision is always in the hands of the philosophers, — if I may be permitted to use this expression henceforth to designate those members of the faculty who are not concerned with the mathematics or the natural sciences; that on account of this unnatural relation all decisions by vote are placed in doubt, and that motions which may be of the utmost importance to the welfare of the natural sciences are in danger of coming to naught; that no help can be expected from the casting of a minority vote, for, since the presiding officers in the universities are usually philosophers, or officials with philosophical sympathies, the fate of a minority vote is almost always sealed at the outset. It would seem in fact that there have been bitter experiences in many places, owing to undivided faculties. "It would indicate a very imperfect knowledge of men," says Hugo von Mohl, "to expect that a majority which

understands nothing of the affairs of the minority and is controlled by entirely different principles will have the self-denial to yield to the judgment of the minority and support its measures; as a rule it will follow its own views, however poor their grounds, and oppose the minority." According to von Mohl an undivided philosophical faculty must steer its course between peculiar dangers when it approaches the task of filling a vacant professorial chair. He affirms that the evil complained of is felt also in case of grants for pecuniary expenses of all kinds,— especially the philosophers are charged with having an insuperable disinclination to provide books on natural science. In the natural science division of the university library "an empty abyss yawns to meet him who enters." In this connection von Mohl mentions a German university known to him where the air-pump for the physical laboratory was ordered of the local pump-maker in order that the money might not go to benefit a foreign mechanic. I do not mean to say, however, that the philosophers were held directly responsible for this valuable enrichment of the physical collection.

A final charge is made against the union by the secessionists, — that of waste of time. "Division of labour," they cry, "is the talismanic motto of to-day; division of labour, which enables us to make the most of the niggard favours of time."

But now let us hear what they have to say who wish to preserve the faculty entire.

Although without doubt the investigator of nature and the philosopher labour in different *fields*, nevertheless it need be admitted only conditionally that the *methods* of the two are different. Investigation in the cause of knowledge, irrespective of every practical advantage to be taken of knowledge gained, is common to both. The physicist, — and I shall use this name henceforward in its ancient sense to designate the investigator of nature, — the physicist, like the metaphysician, starts from a series of hypotheses upon which the well constructed edifice of his con-

clusions is erected. But the physicist, in his work, has aids at his command which are lacking to the metaphysician. The mineralogist, the botanist, the zoölogist have *observation* to help them; the physicist, in the narrower sense of the term, and the chemist have *experiment;* and so far the assertion that the methods of the two are different may be allowed. On the other hand it cannot be overlooked that the methods of the mathematician, whom it is the intention everywhere to include in the proposed natural science faculty, diverge perhaps more from those of the chemist and botanist than from those of the metaphysician. And in like manner it must be admitted that the physicist and the chemist have to pursue paths quite distinct from those of the mineralogist and the botanist, or any other devotee of the descriptive natural sciences. At all events, the apprehension, even if well founded, of disadvantage to the natural sciences from difference in methods between philosophers and physicists, if these were united in the same faculty, cannot have much force as an argument for separation, since even if separation should really follow, the most heterogeneous elements would still be united with one another.

But is there in fact any occasion for such apprehension? The advocates of an undivided faculty assert that this question must be answered in the negative, since hitherto no one has produced proof that the natural sciences have suffered any detriment whatever by reason of their long association with the deductive sciences.

The natural sciences are at this moment, and have been for a long time, more fully developed at our universities than in any other country in the world. And especially is Germany in advance of all other countries as regards the separate representation of the particular branches of natural science. But even with us it was no rare thing, as late as the beginning of this century, to find lectures in two or even three natural sciences delivered by the same professor. But even then a

change took place for the better, while elsewhere the incongruity continued to exist until after the middle of the century. I know particularly of one great and wealthy university where, even as late as this, the chairs of chemistry and botany were united. The dubious nature of his position weighed heavily on the soul of the fortunate double professor, and he gave expression to his embarrassment in a somewhat naïve manner. He carried visiting cards of two kinds, and, as was proper, in calling on a botanist, he left a chemistry card, and in calling on a chemist, a botany card. Nowadays no professor is expected to teach two distinct branches of natural science. If any one wished to-day to criticize the mode in which single branches are represented in German universities, he would do better to take exception to the almost too narrow limits within which many instructors confine their departments. And it is not only the completeness of the organization of the body of natural science instructors which has given our universities an advanced position. The external helps which are necessary to such extensive cultivation of the natural sciences have been granted by governments and legislatures with generous hand. Before the year 1870 an advocate of secession might still have maintained, with some show of reason, that only at universities where the branches of natural science were represented by instructors of extraordinary eminence and energy had they the advantage of at all adequate establishments; to-day we can turn their weapon against themselves, and say that, if there are still at any universities branches of learning which stand in need of suitable establishments, they are certainly only those whose representatives have manifested but meagre interest in perfecting them. In no other country of the world have such palaces and temples been erected to the natural sciences as have arisen and are still standing on every side in the German universities. Nor has this movement been neglected in other countries, and envoys from abroad study carefully and zealously the arrangement of

the natural science departments at our universities in order to advise their governments through comprehensive reports of the results of their investigations.[15] Indeed, we have every reason to be proud of the flourishing condition of the natural sciences at our German universities, and if we reflect that this high state of prosperity has developed while their cultivators tilled the field in company with workers in other domains of learning, it must be admitted that community of labour has been anything but a drag on them; nay, it may be questioned whether the physicists, had they guided the ploughshare of science without the co-operation of the philosophers, would have reaped harvests so rich.

If, now, the natural sciences have in fact suffered no manner of harm from their union with the philosophical branches, if there is no ground for fear that harm may accrue to them in future, then it only remains for us to select particular allegations of grievance, and see what they are worth.

And first, special weight is laid upon the impossibility of making any calculation how an undivided faculty will vote. When it is asserted that the philosophers are everywhere in a majority, the assertion may be true enough as a rough, general statement, though this numerical majority is not the same at different universities. In Berlin the number of philosophers is rather more than twice that of physicists; in Leipzig and Strassburg nearly double; in Tübingen half as large again; while in Göttingen the excess is scarcely worth mentioning. We see then what may be the result of a vote. Let us suppose now a faculty so unfortunately constituted that not one of the philosophers has any acquaintance with the natural sciences or feels any interest in them; and suppose, moreover, that these sciences have not a single supporter among the government officials. In such a case it would be possible for the most useful, nay, the most necessary measure to fall through. But it is evident that there would have to be a rare combination of unfavourable

circumstances to produce such a result. Now let us look at the matter on its bright side also. The members of a united faculty are not narrow-minded specialists whose circle of vision does not extend beyond their own hedge-row. They are far-sighted men, who see in the gain of the smallest part a pledge of the advancement of the whole, genuine Fellows of the *Universitas* in the noblest meaning of the word. The members of the two parts need not possess a very deep insight into one another's affairs, but they feel the need and the desire to understand one another. Suppose that in a faculty thus constituted a proposition has been introduced, on the part of the natural science members, which perhaps at the first glance seems to the others to be of no great utility, but that after a free interchange of opinion it has finally won recognition in spite of that fact, and now, supported by the vote of an entire faculty, it reaches the senate or the minister. How much greater weight will such a proposition have than if it had proceeded simply from a natural science faculty, which after all can consist only of a relatively small number of members, whose ideas, moreover, move in circles so closely related that a comprehensive discussion is hardly possible. The defenders of the united faculty are therefore of the opinion that, although the possibility that the physicists may be occasionally outvoted by the philosophers must be admitted, the injury arising in this way is extremely unlikely. They are especially unwilling to admit that in filling professorships, when not the particular gain of one or another part but the well-being of the entire university is at stake, any injury, even the slightest, has accrued to the natural sciences through a misuse of power on the part of philosophical majorities. And those who never weary of pointing to the preference enjoyed by the philosophical branches in university libraries must not forget that in just this respect the philosophers have a start of centuries which the physicists cannot expect to make good in a few decades. The defenders of

the united faculty on the contrary are convinced that it is precisely the union of the representatives of both fields of investigation on which its position of authority is based, inasmuch as the influence of prominent members of one part must redound necessarily to the good of the other.

On the other hand the advocates of union cannot and do not deny that faculty meetings involve a certain expenditure of time which might be lessened by a division of the faculty. The relation between the simply business duties which fall to the two parts is not easily fixed, and must be different in different universities and at different times. If we assume that the burden of business of a united faculty is distributed between the two parts in the ratio of their numbers, then it would seem that the number of meetings in a faculty of natural science might be reduced in the most favourable case to one-third, and in the least favourable case to one-half. In reality however the saving in time will not be nearly so great; for, in case of business which concerns only a part of the faculty, nothing now prevents the appointment of a committee *ad hoc* to work up the matter under advisement in order to bring it before the full faculty in a suitable state of preparation. Or we may decide in favour of the formation of standing committees, such as have proved useful in the faculty at Bonn for nearly half a century.[16] In this way too the advantages arrived at in Munich might be attained without having recourse to a partial separation, such as has taken place there.

If however as a matter of fact the physicists as well as the philosophers suffer a small sacrifice of time by reason of their union in one faculty, nevertheless the question arises whether this loss is not richly outweighed by the gain to both parts through the union. To mention no others, the external advantages are not to be lightly valued, especially in a great city where the conditions of existence make personal intercourse difficult. The points of contact between the two parts in

matters relating to learning are so many that it is difficult to conceive of a faculty meeting without exchange of ideas and consequently a double gain. In these sessions the most various matters relating to learning are disposed of. Every one, in whatever field he labours, will need assistance more or less often, and he knows that his colleagues are ready and willing to lend it, just as it will be a pleasure to him also to be of service to them in return. As a rule it will hardly be a question of making and satisfying serious demands, but only of rendering small services which may be of great value to the one and cost the other nothing. Possibly it may be only the identification or the explanation of a passage from the writings of the ancients, or an etymological derivation, or a hasty glance into the history of philosophy; or it may be a question of giving a name to a new mineral, or to a new plant, or perhaps of baptizing a new-born child of chemistry. But this comfortable learned intercourse in little things is by no means the only result brought about by the united faculty; we must estimate much higher the gain to each individual in scientific grasp from such a community.

Differences are sharpened by separation and smoothed away by association. This principle is true also of the philosophical faculty. The surest means of forestalling threatening misunderstandings between individuals, or of removing those which have already arisen, is personal intercourse with the whole. And this manifold intercourse is also our best protection against one-sided absorption.

The investigator of the present seeks his salvation, as a rule, in devotion to one science, nay, often to only a part of one science. He looks neither to the right nor to the left, in order that what is going on in his neighbour's field may not prevent him from burying himself in his speciality to his heart's content. We are far from failing to recognize the great value of this very absorption to the progress of science; indeed, the unexampled expansion of science would hardly be possible without the self-restraint

which the investigator exercises, for the most part of his own free choice, in limiting the field of his work. But it gives rise also to serious alarm. Too exclusive occupation with details obscures our view of the great whole, the understanding of which is the final goal of all our efforts,

> "Denn nur der grosse Gegenstand vermag
> Den tiefen Grund der Menschheit aufzuregen.
> Im engen Kreis verengert sich der Sinn."

And especially in view of the unmistakable tendency of our times, the disposition to combine and specialize all effort, any stimulus to intercourse with workers in other fields of study which prompts us to open our eyes to a wider prospect seems doubly desirable. *Ceteris paribus* he whose scientific work is furthest from that of the mere mechanic will be sure of the greatest success. But he who isolates himself in his work or who maintains intercourse only with his immediate companions in his own department is peculiarly exposed to the danger of falling into such petty mechanical labour. I share in every respect the recently expressed opinion of one of our colleagues, of whom surely it will not be said that he would be inclined to underestimate the value of the pursuit of the natural sciences.

"Natural science, when its pursuit is one-sided," says E. du Bois-Reymond,[17] "like every other activity so pursued, narrows the field of view. Natural science under such circumstances confines the glance to that which lies immediately at hand and within reach, to what offers itself as the immediate result of sense-perception with apparently unconditioned certainty. It turns the mind aside from more general, less certain observations, and disaccustoms it to exercise itself in the realm of the quantitatively indeterminable. In a certain sense we extol this as an invaluable virtue of science; but where it is exclusively dominant, the mind is apt to grow poor in ideas, the imagination in pictures, the soul in sensitiveness, and the result is a

narrow, dry, and hard mode of thought deserted by the Muses and the Graces."

Surely there is no better means of guarding against this one-sided deformity than community of labour in the undivided faculty!

And there is still another beneficent influence ascribed by many to the undivided faculty. Attention has just been directed to the one-sided absorption which clings to the scholarship of our times. Still another reproach has been made against it on many sides, that of *arrogance*. There have been scholars at all times with a very high opinion of themselves. Their number has recently increased very considerably, so much so indeed that a peculiar disease has developed which fortunately makes its appearance only in sporadic cases. There is one unfailing remedy against it, which unfortunately cannot be prescribed for every one; this is community of labor in the undivided faculty.

Shall we be willing to give up such advantages for the sake of gaining a few hours by reducing the number of faculty meetings?

These advantages inure to the members of the faculty especially in their character as scholars; but they are at the same time teachers, indeed, we may say, teachers first of all. Let us therefore see what is their attitude toward the question in this latter character, and last, not least, how the men who study under them in the great fields of the philosophical and physical sciences are affected by it.

In the first place, as regards the teacher, there can be no doubt about his interest. If it cannot be denied that a general insight into the contents, the methods, and the aims of cognate sciences, such as the undivided faculty affords, proves of great advantage to the man of learning and to the investigator, in whom some one-sidedness is pardonable, we must admit that such a view of neighbouring territory is an indispensable need of the teacher, whose business it is, above all, to attain a clear

judgment of his position in the great field of instruction, and in whom narrowness would be a serious fault. He certainly exerts himself assiduously to secure a natural development of his subject before his pupils out of its own material, but he is always more or less under the necessity of reaching out beyond the narrow confines of his special study. The material necessary for a full presentation of his thought, from his hearers' point of view, will be at his disposal only at a later stage of his lectures. He will therefore not infrequently be so situated as to be compelled to borrow of bordering departments of knowledge, and he will be the better able to do this the more comprehensive is his view of them.

In this requirement, that the members of the faculty shall be teachers, lies also the essential distinction between faculty and academy. In the academy the didactic element is not represented at all, and therefore the division of the academies, which has often been successfully effected, cannot fairly be made a precedent to be followed by the philosophical faculties at the universities.

Separation might appear undesirable to the teacher for still another reason. Freedom of instruction is one of the first conditions of existence for the German University. Now, certainly no one fears that this highest good would be put in jeopardy by separation. But the teacher values this good so highly that the change of the university to a group of special schools, which is merely hinted at in separation, fills him with alarm. And his alarm is not altogether unfounded. Both opponents and advocates of the undivided faculty have often called attention to the fact that the philosophical group on the one hand stands in closer relation to the theological and juristical faculties, and the physical science group on the other hand stands in closer relation to the medical faculty, than the two groups stand to each other. Opponents see a ground for division in this circumstance,[18] while the advocates of union

use it as an argument on their side.[19] The latter rightly point out that if aspirations toward the ideal are no longer represented in one body, as now in the philosophical faculty over against the faculties whose aims are more practical, if the three other faculties are no longer referred to one common source whence they may draw the preliminary knowledge necessary to the attainment of their special aims, a mighty bond of union that fastens the single departments to the university will disappear, and thereupon the practical departments, as well as the fragments of the old philosophical department, will be in danger of forming themselves more and more into special schools, a danger not to be underestimated in view of the present loosely-jointed union of departments at our German universities.

But while the maintenance of the philosophical faculty in its completeness is of unmistakable importance to the teacher, it has no small significance for the pupil. Immediately upon his entrance into the university the student becomes conscious of this significance. Many of our young friends, — and perhaps some of our fellow students now present are in this position, — are very far from coming to the university with a fixed plan of study, and it is fortunate for them that the door of a great multiform faculty opens before them. Taken up into the ranks of the students of philosophy, they will choose the group of studies in which they expect to make themselves at home, without undue haste, and after taking proper account of their special talents and their circumstances. But during the entire period of their study they get the advantage of the wide horizon opened to them in the undivided faculty, which challenges them daily to let their glance sweep far beyond the narrow confines of their special study over other parts of the sciences united in it.

To be sure the objection will be raised that no one, in whatever department he may be registered, is prevented from attending lectures in other departments, as in fact medical stu-

dents are in the habit of attending a large number of natural science courses; but we cannot fail to see that, when it is a question of attendance upon lectures outside of one's department, there is a very considerable difference between not forbidding and encouraging.

But as the teacher values freedom of instruction above all else, so freedom of study, and, in a wider sense, academic freedom is very dear to the pupil. And he may well be apprehensive that in the division of the faculty a danger really threatens this freedom. In fact, does not this separation of the physical from the philosophical branches seem like a first step, scarcely noticeable perhaps though it be, toward the introduction of a fixed regulation of studies, which, however justifiable in a polytechnic institute, would be inconsistent with academic freedom? Indeed, in his independence of every compulsory regulation, in his unlimited freedom to determine for himself his course of study, giving him as it does confidence in his own mature judgment ripened to a consciousness of self-responsibility, consists a substantial advantage which the German student possesses over the English or French student.

And again, as the time approaches for him to give an account of his study, it is a source of satisfaction to the student that this test takes place within the great undivided faculty. He is indeed forewarned that more than one-sided knowledge will be required of him, that he must show a general familiarity with one or another cycle of sciences, but, in return, a correspondingly high reward beckons him on; for the document which is the assurance of his scientific training does not stamp him merely doctor of some special science, but clothes him with the dignity of Doctor of Science, *Doctor Philosophiae*.

That the argument in favor of the continued unity of the faculty has been taken up on this occasion more especially from the standpoint of the physicist will certainly not surprise any one. It would not in fact be easy for me, should I attempt

to describe for the benefit of our philosophical colleagues the feelings of regard and esteem which I have no doubt they cherish toward us. I take it for granted that if any one of them stood in my place he would pay the tribute of approval to the physicists, as I have bestowed praise upon the philosophers, and that he would be just as sorry not to see the natural science element in the faculty as we should be to be deprived of the philosophical. It is possible indeed that he might see in this element a protection not to be despised against many dangers which threaten the philosopher in his special domain. He might perhaps think of the warning which the Thracian maid called out to the wise man of Miletus, when, with his eyes fixed upon the stars, he did not see the ditch at his feet; or the oft-quoted words of Goethe might occur to him in a new application: —

The philosopher separated from the physicist

Hebt sich aufwärts
Und berührt
Mit dem Scheitel die Sterne,
Nirgends haften dann
Die unsichern Sohlen,
Und mit ihm spielen
Wolken und Winde.

United with the physicist,

Steht er mit festen,
Markigen Knochen
Auf der wohlgegründeten
Dauernden Erde.

Here I might stop. But alongside of the question of the division of the faculty or its preservation in its entirety stands a second question so connected with it that with the solution of the one a step would be gained toward a solution of the other. This second question may be expressed in two words: —

Gymnasium or *Realschule?*

For more than a quarter of a century this question has been the subject of a lively discussion, in which spokesmen from all quarters have taken part and given various answers according to the party position of each, and it is scarcely more than a decade since it was subjected to a public investigation, in the course of which the faculties of all the Prussian universities were heard. Indeed this important question has been so thoroughly illustrated from all sides that it may almost appear a rash undertaking on my part to attempt now at the eleventh hour to present it from a new point of view. I trust, however, that I shall be permitted to touch upon the question, if only cursorily, in order to demonstrate that the influence of a division of the faculty would reach far beyond the limits of the university.

Every one will admit the justness of the aims which the founders of the *Realschule* had in view. It is not strange that callings in life, which, though of scarcely noticeable importance before the middle of the century, have in our own times rapidly reached an influential position in the state and have become conscious of it, felt the need of having their special work represented in the school training. Corresponding to the university the polytechnic institute arose, and, as preparatory to it, the *Realschule*, taking the place of the *Gymnasium*. By the side of the old, well-tried form of higher instruction, a new system of education, sprung from the new conditions of existence peculiar to our times, came into being, and though differing in aim and in the means employed, took a place alongside the elder system as its recognized complement.

As long as this complementary system of instruction remained true to the tasks prescribed by its origin, it had the happiest results. But it was soon led away, by the movement to which it owed its origin and direction, far beyond the goal originally set for it. It was first of all the *Realschule* for which

a wider mission was claimed. Why should not a school which prepared its pupils successfully for the polytechnic institute be in a position also to pave their way to the university? Mathematics, the natural sciences, modern languages, to which the *Realschule* is particularly devoted, — why should they not contain the same elements of mental training which have hitherto been exclusively accredited to the classical languages, whose cultivation is the care of the *Gymnasium?* But if that is so, must not the view that preparation for the universities can be found only in classical studies be considered as superseded?

The most zealous spokesman of the new movement could not deny that the original plan of studies of the *Realschule* would not suffice as a preparation for the university. The only question remaining was to what extent the classical groundwork should be recognized. The necessity of incorporating Latin, within certain limits, into the system of instruction did not seem to any one open to doubt; and some voices were raised too in favour of at least elementary instruction in Greek.[20] After great oscillations of opinion which have not yet come to rest altogether, there issued from this movement the *Realschule* of the First Rank (*Realschule erster Ordnung*). And now began a contest of rivalry between the new school and the *Gymnasium*, which though not always fortunate for the former secured for it at last no mean success, a contest whose changing fortunes we have ourselves witnessed. Both oratory and the written essay have done service to the new movement, and it has found champions in city councils as well as in the House of Representatives. Concessions have been made in authoritative circles to continuous pressure only slowly and with great caution. The call upon the faculties of all Prussian universities for an expression of opinion upon the question, whether and to what extent graduates of the *Realschule* should be admitted to the university, will always be a striking testimony to the earnest care which has been bestowed upon this most important matter. True, all of these numerous bodies have

not given the same interest to the question proposed to them. The answers of particular faculties, moreover, have been in some instances assenting, or, if negative, not unanimously so.[21] Nevertheless the total result of this great investigation cannot be a moment in doubt, and may be briefly summed up as follows: that the *Realschule* of the first rank, however generous acknowledgement may be due to what it has actually accomplished, is nevertheless incapable of furnishing a preparation for academic studies equal to that offered by the *Gymnasium;* that the *Realschule* lacks — this, for instance, is the opinion of the Philosophical Faculty in Berlin — a central point about which all other branches may group themselves, while the *Gymnasium* possesses such a point in the classical languages; that all efforts to find a substitute for the classical languages, whether in mathematics, in the modern languages, or in the natural sciences, have been hitherto unsuccessful; that after long and vain search, we must always come back finally to the result of centuries of experience, that the surest instrument that can be used in training the mind of youth is given us in the study of the languages, the literature, and the works of art of classical antiquity. According to the unanimous judgment of experienced teachers in the departments of mathematics and the natural sciences, graduates of the *Realschule* are almost without exception overtaken in the later semesters by students from the *Gymnasia*, however much they may excel them in the same branches in the first semester.[22] Such evidence needs no comment. Still more convincing is the outspoken preference for teachers who owe their preparation for the university to the *Gymnasium*, expressed by the director of a highly esteemed industrial school in a noteworthy school *Program*.[23] I might add an experience of my own to the numerous testimonies in favour of the *Gymnasium*. I have never heard a student from a *Gymnasium* express a wish that he might have received his training in a *Realschule;* how often, on the other hand, have I

met with young men prepared in the *Realschule* who grievously regretted that they had never had part in the training of the *Gymnasium!*

I do not of course mean to assert that the *Realschule* does not send a number of excellently prepared men to the university. Young men of talent will prepare themselves for the academic course of instruction advantageously in any school; and it would not be difficult to name prominent men in all departments of human activity who have made their way without any school training whatever. If we wish to compare the relative efficiency of the two systems of instruction, we must keep in view the *average* capacity of those who are to be instructed; and I hardly need emphasize the fact that the experience which has engaged my preferences so decidedly in favour of the *Gymnasium* training is formed upon observation of a large number of young men of average gifts, part of whom had their preparatory training at the *Gymnasium* and part at the *Realschule*.

The views expressed in the formal opinions of the academic faculties in 1869 have had no influence in any way to check the success of the *Realschule* of the first rank. On the contrary, the concessions already granted it have been still further extended, and its certificate of graduation entitles its pupils to-day to register in the philosophical department, in order to pursue further certain subjects pertaining to this department. These successes of the *Realschule* of the first rank are to be ascribed no doubt in part to the attitude of vacillation or of assent of certain of the faculties; but they are probably more especially due to the belief so often expressed, that the official opinions rendered by the Prussian faculties in 1869 were rather the outcome of theoretical timidity than the result of experience based upon actual facts.

However, more than a decade has passed since those opinions were rendered, and the question is surely now ripe for decision, how far practice has confirmed what theory could not gain credence for.

We dare no longer deceive ourselves. The system of preparatory training for academic studies in our German universities is undergoing a significant change. The number of *Realschüler* among our students — and this need not surprise us — increases from year to year. The statistics of our own university leave no room for doubt in this respect. In the course of the past five years the number of students from *Realschulen* registered with our Philosophical Faculty has nearly trebled. At other universities there has been a similar increase. There is accordingly no lack of practical experience, and the result is that the belief which had already been entertained has been strengthened. Ideality in academic study, unselfish devotion to science for its own sake, and that unshackled activity of thought which is at once the condition and the consequence of such devotion, retire more and more into the background as the classical groundwork of our mental life found in the *Gymnasium* is withdrawn from the pre-university course. This is, to be sure, in the first instance, only a personal belief drawn from personal experience; but I will not omit to say that I have had abundant opportunity to discuss the subject with friends connected with the physical and mathematical sciences, and I have found them almost without exception firm in the same conviction.

The form and contents of university instruction, however, will always be dependent on the amount of preparation which the student brings with him to the university. A falling off in the requirements of this preparatory training will inevitably be followed by a lowering of the character of university instruction itself. Would then, under such circumstances, the German university, the glorious centre of our civilization and the object of the emulous admiration of other nations, remain much longer what it has been for so many years?

It is not my task to-day to enter upon the solution of this question. It lies also beyond the limits of this address to examine the means by which the danger of a lowering of the

standard of preparation for the university might be successfully met. It will seem to many that the best remedy must come from the *Gymnasium* itself. The *Gymnasium*, it must be thankfully recognized, has enjoyed for many years the unremitting care and attention of the most distinguished men in influential circles, who have taken upon themselves with enthusiasm the advancement of this nursery of our youth. But these very men recognize, perhaps better than any one else, the fact that the *Gymnasium* is to-day susceptible of improvement in many directions, especially in its methods of instruction, without in any way imperilling the well-tried foundations of its efficiency. Perhaps this very *Realschule* movement is playing into the hands of such reformatory efforts; perhaps in so doing it fulfils its proper mission. The men who direct our schools have indeed a far-reaching and difficult task laid upon them, and they need not be discouraged if it cannot be at once accomplished. They must not forget that when it is a question of changes in a product of ages the results effected even by decades cannot be of much significance. If in our time the idea has become widely extended that, because physical science has taught us to despatch our thoughts with the swiftness of lightning from hemisphere to hemisphere, the process of thinking itself goes on more swiftly and more easily, this is a fundamental error. We do not think to-day any more quickly than we did yesterday, and — those who were charged with the preparation of the education law will certainly bear me out in this — good ideas have not become cheaper than they were at any earlier period. We must not therefore be surprised if our efforts to establish a *Gymnasium* which will answer *all* requirements are not crowned to-day, nor yet to-morrow, with brilliant success.

Many of you, my hearers, have long since perhaps reproached me with losing sight completely of the subject of my discourse. Have I really lost sight of it? I think not. When I raise my voice in behalf of the *Gymnasium*, I am arguing in favour of an

undivided faculty. The advocates of secession are labouring, perhaps without being clearly conscious of it themselves, toward the same end as the partisans of the *Realschule*, — the recognition of a preparatory training for the university founded upon a new basis, or as they themselves love to call it, a break with the medieval view that this preparatory training is to be found only in the study of the humanities. Every cleft in a philosophical faculty brings water to the *Realschule* mill. The mighty wall of protection about the *Gymnasium* is the close phalanx of the undivided philosophical faculty.

A few words more, and I am done. It may seem to some here and there in this assembly that I have spoken with reference to some dissension that threatens us in the immediate future. Such a supposition might find support perhaps in the fact that the membership of our philosophical faculty is so very large, larger than that of any other German university, larger even than the entire membership of all the faculties in many a German university. But such a supposition would be entirely erroneous. I had no reason for treating my academic theme otherwise than in a purely academic manner. In the course of the fifteen years during which I have had the honour to belong to the philosophical faculty of this University, the idea of separation has never even been suggested; and it would be difficult, I am sure, to find a body in which the conviction that all its members belong together, the consciousness of strength springing from variety in its composition, the feeling of unity and indivisibility, are more actively developed than in our own philosophical faculty. And this consciousness of our solidarity, this feeling of our unity, is but a feature of that higher spirit of community by virtue of which the different faculties recognize that they are sisters, equally privileged daughters of *Alma Mater*, that spirit which is the foundation of our university, and whose breath preserves the bloom of our great school unfaded. In this spirit let us enter upon the year of study now opening before us *viribus unitis!*

Opinion of the Philosophical Faculty of the Royal Frederick-William University of Berlin concerning the Admission of Graduates of Realschulen to the University, presented to His Excellency, Dr. von Mühler, Royal Minister of State, on December 13, 1869.

BERLIN, December 13, 1869.

YOUR EXCELLENCY: —

IN the rescript of November 9, transmitted by the Rector and Senate to the Philosophical Faculty on November 24, Your Excellency has requested an opinion on the question: —

"Whether and to what extent graduates of *Realschulen* should be admitted to the departments of the Universities."

The Faculty, having taken the subject anew into serious consideration, hasten most respectfully to present their views to Your Excellency.

While the University has no reason to withhold its advantages, it must not, in its desire to make the higher education accessible to the greatest possible number, forget its peculiar purpose and its historical task. Its duty is to fit the youth for the service of State and Church, after they have received sufficient preparation. The view that the complete *Gymnasium* course is such a preparation is to-day still fully justified. The instruction of the *Gymnasium* centres in the classical languages, the methodical study of which necessarily carries with it manifold logical and historical training. They furnish the most difficult, and for that very reason also the most effective instrument of instruction, and it is for the interest of the State that all to whom it expects to intrust its offices should go through this intellectual training, substantially complemented as it is by mathematical instruction, and thus gain for themselves a liberal and many-sided culture, such as they could not attain in any other way. Such is the close tie between the University and the *Gymnasium*, which has proved itself since the Reformation the corner-stone of German culture.

By the side of the *Gymnasium* a species of schools has developed itself in recent years, which have been gradually pro-

vided, in analogy with the *Gymnasium*, with a series of rights and privileges, — schools which have been called forth by a need lying quite apart from the University, and whose office is to furnish a fitting preparation for the higher industrial positions. If it is further claimed for these schools that the preparation which they furnish is to be regarded as sufficient for the University also, then it becomes necessary to look more sharply at their character and at the results which they accomplish.

They also aim at a certain completeness of education, and it might seem that the lower grade of training of the *Realschüler* in *one* branch of study would be compensated for by greater proficiency in another. The *Realschule* fixes a higher standard in mathematics certainly, but the end which it attains always depends finally on the personality of the teacher; there are *Gymnasia* which accomplish just as much; and on the whole the start gained by the average *Realschüler*, so far as concerns his ability to acquire the higher mathematics, is insignificant. In regard to the natural sciences, the most notable of our chemists and physicists, as well as the representatives of the other departments, agree that the students from the *Gymnasia* on the average accomplish more. It is the general experience that the foretaste of these sciences obtained in the *Realschule* frequently dulls rather than stimulates eagerness for knowledge. Still less are the modern languages able to take the place of Greek and Latin; for, since as a rule the only thing aimed at in their study is a certain facility of use, they cannot serve in equal manner as an instrument of culture. The main point is that the instruction given in the *Realschule* lacks a central point; hence the unsteadiness in its system of teaching. It embraces a collection of studies most of which cannot be pursued with the requisite thoroughness within the limits of the school. In a word, it has not been possible to find an equivalent for the classical languages as a centre of instruction; and therefore the University cannot deem it advisable for the

State to cease to require a *Gymnasium* training for its future functionaries.

While, moreover, the *Realschule*, in accordance with the inherent nature of industrial conditions, seeks to hasten the period of graduation and dismisses its pupils generally a year earlier than the *Gymnasium*, it is not in the interest of the University to desire an increase in the number of students of seventeen years of age. It is rather a matter of importance to all the faculties that they shall have a body of young men more mature in age and training. The philosophical department has a peculiar interest of its own in seeing that the requirement of a classical education is not departed from, because it educates the teaching class. For while the training of the *Gymnasium* is an indispensable dowry for every department of science and for every higher official calling, it is especially so for the teacher.

The *Realschulen* are attended mainly by those who wish to avoid the severe labour of Greek and Latin. If the graduates of these schools, after the expiration of their three years' University course, could become in turn themselves teachers in *Realschulen*, a constant falling off in standards would be unavoidable; and hence the directors of *Realschulen* themselves, who have the highest conception of the special work of their institutions, have with great decision fixed the requirement that teachers in the *Realschule*, like teachers in the *Gymnasium*, shall be such as have had a classical training, — that is, such as have been prepared for their profession in the *Gymnasium* and the University. (*Kern, Vierter Jahresbericht über die Louisenstädtische Gewerbeschule*, 1869, p. 13.) Thus the fitness of the *Realschule* to serve as a nursery for its own future teachers is denied by its own representatives.

That which undoubtedly applies to those who are perfecting themselves for the profession of teaching is just as true of all branches of study that are accustomed to serve as a preparation for the higher executive positions, and especially does it apply

to the administrators of the public moneys (*Cameralisten*), who must not be without the breadth of view and historical culture given by the *Gymnasium*. Nay, even in the circles for whose benefit the *Realschulen* originated, in the great commercial houses and in industrial institutions, the experience of our times proves that those young men are more welcome who come from the *Prima* of a *Gymnasium*. If then, in those very circles, an unmistakable counter-current has set in against the earlier over-rating of the *Realschule*, why should the University surrender its organic union with the *Gymnasium*, and be willing to obliterate a distinction in education whose existence cannot be denied?

Extraordinary talents will always make a way for themselves to public appreciation. But the Faculty are compelled to give their entire recognition and approval to what has hitherto been the rule, that in the case of every one who aspires to the service of the State it may be taken for granted that his education has been, up to the beginning of his academical career, liberal, general, and not narrowed by considerations of future professional aims, and to utter a warning against the surrender of that which has been till now the common basis of training of all the higher public functionaries, and which, if it be once given up, can never be regained.

The University does not close its doors to those young men who have not pursued classical studies. For, although it distinguishes between graduates and non-graduates, admitting the latter at first to matriculation for three semesters only, still this period, which is measured by the average need of non-graduates, can be extended without difficulty, and even where by legislative provision matriculation is not possible, the Rector may, in proper cases, grant permission to attend lectures. Further propositions to facilitate the entrance of non-graduates were suggested in the report on the matriculation of *immaturi*, which was submitted to Your Excellency by the Faculty on Dec. 3, 1868.

Aside from these formalities attending the reception of students, no distinctions of any kind exist. The University offers the same opportunities to all, and puts the *immaturi* legally on the same level with the other students.

Any further concession to the demands of the *Realschule* would mean that the University ceased to regard the *Gymnasium* training as the only regular preparatory course, and recognized on equal terms a standard of culture which cannot in its eyes pass for the same thing. The Philosophical Faculty cannot give their consent to such a movement. They are convinced that no sufficient compensation is given in the *Realschule* for the lack of classical education. They fear that so decided a lowering of standards would be accompanied by weighty consequences, especially in such a state as Prussia.

The Faculty, therefore, believe they owe it to the University and to the State to declare themselves in the most positive manner against a more extensive admission of *Realschüler*, that is, against placing them on exactly the same footing with graduates of *Gymnasia*.

The Dean and Professors of the Philosophical Faculty of the Royal Frederick-William University of Berlin.

CURTIUS, ... *Dean.*

HAUPT. MÜLLENHOFF. KIRCHHOFF. DOVE.
TRENDELENBURG. RÖDIGER. M. OHM. G. ROSE.
DROYSEN. WEIERSTRASS. VON RAUMER. MAGNUS.
KUMMER. WEBER. HARMS. BEYRICH. W. PETERS.
MOMMSEN. A. BRAUN. E. HELWING.

To His Excellency, DR. VON MÜHLER,
Royal Minister of State, &c., &c.

Opinion of the Philosophical Faculty of the Royal Frederick-William University of Berlin concerning the Admission of Graduates of Realschulen to the University, presented to His Excellency, Herr von Puttkamer, Royal Minister of State, on March 8, 1880.

BERLIN, March 8, 1880.

YOUR EXCELLENCY: —

THE undersigned, the members of the Philosophical Faculty of the Royal Frederick-William University, take the liberty of presenting the following considerations to Your Excellency, in discharge of their duty to that portion of the University studies entrusted to their care.

It was determined by a ministerial decree of December 7, 1870, that in the case of such subjects of the realm as should desire to be matriculated in the Philosophical Faculty of a Prussian National University for the purpose of pursuing the study of mathematics, the natural sciences, or modern foreign languages, the diploma of a Prussian *Realschule* of the first rank might be substituted for that of the *Gymnasium*. In the course of the negotiations which preceded this decree, the Philosophical Faculty of this University stated with great decision that they considered it imperative, in the interest of the thorough and symmetrical preparatory training of their students, to hold fast to the requirement of a *Gymnasium* preparation for all branches of study falling within their jurisdiction. And now that in the case of a number of those studies this requirement has been set aside for more than ten years, they deem it neither premature nor superfluous to lay before Your Excellency the results of their experience during that time with reference to the effect of the change introduced, respectfully pointing out at the same time that the practical effects of the arrangement at present existing could not, in the nature of the case, be seen until sometime after its first introduction on a large scale.

The undersigned, the members of this Faculty, find themselves the more urgently challenged to this presentation of

their views, the more unmistakable it becomes that the number and the percentage of *Realschüler* among their students have been constantly increasing in recent years. While during the winter half-year of 1875–76 of 705 Prussians matriculated in the philosophical department 56 were newly admitted *Realschüler*, that is not quite 8 per cent, in the current winter half-year of 1879–80 of 1299 matriculated Prussians 144 entered from *Realschulen*, that is more than 11 per cent;[1] and this increase becomes still more striking if we base the comparison upon the single sciences to which *Realschüler* have access. In 1875–76 among 214 native students of mathematics and the natural sciences there were 17 *Realschüler*, that is not 8 per cent; in 1879–80 among 460 there are 69, or 15 per cent. And the increase would be found to be equally large among the students of modern languages, with regard to whom we have not exact information at hand.

It has not been possible for all the members of our Faculty of whose instruction *Realschüler* take advantage to institute observations concerning the success of such scholars among the different classes of their pupils, and the conclusions of individual members do not always agree; but the great majority of us who are in a position to give an opinion at all have found the apprehensions with which the Faculty as early as 1869 felt compelled to regard the admission of *Realschüler* to the University by no means allayed by our subsequent experience.

Those representatives of the mathematical branches whose lectures are more particularly attended by students in the first semesters, it is true, say that they have observed no difference between graduates of *Gymnasia* and *Realschulen* in the results of their studies; but, on the other hand, both of the full professors who are accustomed to give instruction in the higher mathematics hold without change to the verdict already

[1] Compare the statistics quoted in the Preface, page 3. A. W. H.

repeatedly given by them, that the students of mathematics who have been prepared in the *Gymnasia*, in spite of the fact that less time is devoted to this branch in the *Gymnasium* than in the *Realschule*, are nevertheless, as a rule, superior to their fellow-students from the *Realschule* in scientific impulse and apprehension, and in capacity for a deeper understanding of their science.

In concurrence with this, the representative of the astronomical department announces it as his experience, almost without exception, as well in the observatory as in the central office of the government department of weights and measures, that the young men who have received their preparatory training in the *Realschule*, although at first, perhaps, better informed and more apt than those who have been prepared in the *Gymnasium*, nevertheless cannot in the end bear comparison with the latter, their further development being slower, more superficial, and less independent, while they suffer especially in a greater degree from whims of independence and lack of self-knowledge.

It is also emphasized by the instructors of chemistry that graduates of *Realschulen* do not stand upon the same level with graduates of *Gymnasia*. Professor Hofmann observes that the students from *Realschulen*, in consequence of their being conversant with a large number of facts, outrank, as a rule, those from the *Gymnasia* during the experimental exercises of the first semester, but that the relation is soon reversed, and, given equal abilities, the latter almost invariably carry off the honours in the end; that the latter are mentally better trained, and have acquired in a higher degree the ability to understand and solve scientific problems. Professor Hofmann adds that his own experience in these matters is by no means new; that Liebig expressed himself at various times to the same effect. Professor Rammelsberg says, with regard to the students of the technological schools who attend his lectures on chemistry in the first semester, that those of them who come from the *Gym-*

nasia, although without any previous acquaintance with the subject, evince nevertheless a more lively interest than the graduates of *Realschulen* and industrial schools, who, in consequence of their greater familiarity with the sciences treated, listen with a certain indifference. He says it has also been his experience in the examinations at the close of the semester that the *Gymnasium* men stand relatively better than the other classes of pupils, from whom certainly greater results would naturally be expected.

Professor Peters, one of the instructors of the descriptive natural sciences, observes that in the students from *Realschulen* whose acquaintance he has made in zoölogical exercises and examinations he has been struck by their defective knowledge not only of the Latin but also of the English and French languages; that the names and terms borrowed from the Greek cannot be made clear to them, and their want of practice in Latin is very much felt by reason of the large number of zoölogical works composed in that language. Assistant Professor von Martens, drawing from his experience with *Realschule* students, — which it must be noted is limited, as he himself says, to a small number of generally zealous specialists, — renders a more favourable verdict, in so far as he states that he has perceived no difference between them and other students, in power of observation, accuracy in discriminating observed facts, and in scientific zeal, industry, and persistence. But he also says that they often evince less cleverness and more dullness in comprehending and expressing again what they have heard than those who have been prepared at the *Gymnasium*.

Among the representatives of the modern languages, Professor Tobler, whose department is the French language and literature, expressed himself on a previous occasion to the effect that, among the students of modern philology registered in his seminary (relatively not a very large number be it said), he had not observed any considerable difference between men from the

Gymnasium and the *Realschule* as regarded their scientific capacity. On the other hand the instructor in the English language and literature, Professor Zupitza, has found in his seminary exercises that in the case of many *Realschüler* their attainments in Latin are not so trustworthy as would be desirable for a profitable scientific study of his branch, while he has not been struck with the same deficiency in men from the *Gymnasia*. In like manner he has often felt the want of a knowledge of Greek on the part of this portion of his hearers, making grammatical instruction more difficult. But the circumstance seems to him still more important that among the *Realschule* men acuteness of apprehension and independence of judgment have been almost entirely lacking, so that with all their industry they are generally able to cover in their work only such ground as has been marked out for them. The examinations in English also which Professor Zupitza had to undertake as a member of the scientific examining commission showed on the average more favourable results in the case of men from the *Gymnasium*.

Of the representatives of the German language and literature, Professor Müllenhoff sums up the results of a detailed and thorough discussion with the words: "Judging from my experience it is simply impossible for one who has been prepared in the *Realschule* to acquire a satisfactory scientific education. No man acquires it by means of the modern languages alone, nor without a solid foundation in the training of the *Gymnasium*." And Professor Scherer, the second regular instructor in this branch, complains of the difficulties which beset instruction in this department, if the teacher cannot be sure that the most elementary comparison of a German with a Greek form of speech will be understood by all of his hearers, and does not know whether the great Greek models of German literature, whose development he is about to present, are at least in some measure familiar to them all.

As regards the philosophical lectures, Professor Zeller declares that the *Realschüler*, who attend them in large numbers on account of the requirements of the examinations for the higher school employments, are always a cause of embarrassment to him; for, not only in the history of ancient philosophy, but also in other philosophical systems, by reason of the close relation between modern and ancient philosophy and their terminologies, a large portion of lectures which are calculated for the wants and understanding of students with classical training must necessarily remain more or less unintelligible to those of his hearers to whom the Greek language is totally unfamiliar and who lack a living acquaintance with Greek antiquity.

Of the instructors in economics and statistics, Professor Meitzen says that in the young men without the *Gymnasium* training who were occupied in the statistical bureau he constantly found, even when they had completed a course in some academical study, that they had no clear consciousness of their own scientific capacity and no sure insight into the growth of man's mental life.

To the undersigned Faculty these verdicts of so many of their instructors can serve only to strengthen their conviction that the preparatory education which is acquired in the *Realschulen* of the first rank is, taken altogether, inferior to that which is guaranteed by the diploma of a *Gymnasium*, not only because ignorance of Greek and deficient knowledge of Latin oppose great obstacles to the pursuit of many branches of study which are not by law closed to graduates of *Realschulen*, but also and above all because the ideality of the scientific sense, interest in learning not dependent upon nor limited by practical aims but ministering to the liberal education of the mind as such, the many-sided and widely-extended exercise of the thinking power, and an acquaintance with the classical bases of our science and our civilization, can be satisfactorily cultivated only in our institutions of classical learning. The Faculty find a

remarkable confirmation of this conviction in what has come to their knowledge concerning the results of the examinations held by the scientific examining commission for the Province of Brandenburg. Of sixteen graduates of *Realschulen* examined by this commission since 1876, four had to be rejected on account of insufficient attainments; of the remaining twelve not one received a certificate of the first rank, five received one of the second, and seven one of the third; of these twelve, moreover, not less than nine had to undergo a subsequent examination, in order to complete the evidence of their general scientific training, partly in religion, partly in Latin, and partly and especially in philosophy; and also in the case of the three others their knowledge of philosophy appeared only barely satisfactory. Such results cannot but strengthen the view that graduates of *Realschulen* very often lack the degree of general scientific preliminary training required for a successful course of University study.

This defective preparation, however, not only interferes with the success of the studies of those directly affected, but, as our Faculty have already pointed out, it reacts injuriously on the entire instruction in all the lectures which are attended in any large number by students of this class. For it compels the instructor either to descend to the level of his poorer pupils, and by so doing to weary those who are better prepared and curtail what might have been imparted to them, or, on the other hand, if he does not take this difference into consideration, to lecture with the crippling consciousness that a part of his hearers do not fully understand him. Instruction, to be fresh, confident, and successful, must be fitted to the capacity of the pupils. If their capacity is unequal, these qualities must unavoidably suffer more or less severely from such an evil state of affairs.

But while we lament this condition of things in the interest of University studies as such, we cannot refrain from pointing

out the further consequences, affecting the entire scope of our education, that threaten to follow from the change in regulations concerning preparatory academical studies which has been introduced within the past ten years, and the results of which are becoming more and more obvious.

The large number of students registered in the departments of philology, mathematics and the natural sciences (780 since Michaelmas, 1875) leaves no doubt as to the intention of many of them to enter at some time the profession of teaching in the higher schools and perhaps in the Universities; and the modifications in the regulations for scientific examining commissions, issued within the past ten years or recently prepared, show that this intention is recognized and encouraged by the authorities.

The interest of the Philosophical Faculty in this rapidly advancing change is by no means limited to the question whether the elements thus incorporated bring with them the preparation which the Faculty must take for granted in their instruction.

If the system of instruction in the *Realschule*, however excellent for its purpose, is in all essential characteristics different from that of the *Gymnasium*, and nevertheless both have equal recognition, then a kind of double standard is introduced which gives occasion for serious apprehensions. For the fact that our *Realschulen* of the first rank dispense with Greek altogether and in Latin stop several steps lower than the *Gymnasium* exerts upon the sum total of the intellectual training and preparation which they afford an influence very noticeable in its wider consequences. Our higher scientific and, in an intellectual sense, national education, will, in proportion as the preparatory studies pursued in our *Realschulen* gain wider authority, lose, together with its hitherto uniform foundation, advantages which we perhaps value too lightly while they are still in our possession.

France, who demolished her ancient educational system in

the tumult of the Revolution, and then in the time of the Directory and Consulate set up the polytechnic system of instruction in its place, has been labouring with the greatest exertion for twenty years to bring into use again the formative power of classical studies for instruction in higher schools.

Hitherto our three higher Faculties have been able to protect themselves against the admission of students who have been prepared at *Realschulen*. Seeing that the practical aim of most, if not all, of the students in the fourth Faculty prepared in such schools is to enter the higher field of teaching, our higher schools are in danger of receiving a constantly increasing number of teachers who do not possess the kind and amount of scientific preparation which the graduates of our *Gymnasia* must have exhibited in order to obtain their diplomas.

This injury is not balanced, it is rather aggravated, by the fact that our higher schools divide up their instruction more and more among specialists, and that this process of specialization is already formally recognized in the existing rules for the examination of candidates for school positions, and threatens to become still more highly favoured in the new system of rules which is now in preparation.

If the idea which controlled the organization of the higher *Realschulen*, that its scholars were to have a certain share in the higher aims of the *Gymnasium*, is justified, then we cannot and should not wish to think of choosing other teachers for them than such as have been prepared in the *Gymnasium* for the studies of the University.

If it is not our purpose to transplant our system of education altogether from classical to polytechnic ground, then it is doubly hazardous, by shutting our eyes and by the introduction of all sorts of prejudicial rules, to bring about a result which is not intended.

Upon the basis of the preceding statements, after full and thorough consultation and in accordance with a resolution

unanimously adopted, the undersigned, the members of the Philosophical Faculty, respectfully address to Your Excellency the request : —

" That Your Excellency will subject the question of the further admission of graduates of *Realschulen* to the University to renewed consideration, having regard to the objections herewith presented."

The Dean and Professors of the Philosophical Faculty of the Royal Frederick-William University of Berlin.

HÜBNER, *Dean.* WATTENBACH, *Prodean.*

To His Excellency, HERR VON PUTTKAMER,
Royal Minister of State, &c., &c.

The Faculty consisted at the time of the framing of this memorial of the following members : —

DROYSEN. KUMMER. ZELLER. HELMHOLTZ. LEPSIUS. MOMMSEN. G. KIRCHHOFF. MÜLLENHOFF. CURTIUS. VAHLEN. PETERS. HARMS. NITZSCH. WATTENBACH. SCHRADER. A. W. HOFMANN. WEIERSTRASS. BEYRICH. A. KIRCHHOFF. WAGNER. VON TREITSCHKE. WEBER. SCHWENDENER. SCHERER. HÜBNER. TOBLER. EICHLER. SACHAU. GRIMM. SCHMIDT. KIEPERT. WEBSKY. RAMMELSBERG. FOERSTER. ZUPITZA. ROBERT.

NOTES.

[1] Number of regular professors in the four faculties of the University of Berlin in the years

	Theology.	Law.	Medicine.	Philosophy.
1810*	3	3	6	13
1880	7	8	13	38

[2] Robert von Mohl, Die Polizei-Wissenschaft nach den Grundsätzen des Rechtsstaats. Tübingen: 1832. In the edition which I have at hand, — the second, 1844, — the passage quoted is in Vol. I. pp. 518, 519.

[3] A question addressed by the Hessian government to the philosophical faculty of Giessen in the year 1855, whether, in view of the proportionally large number of professors in the faculty and of the union of very heterogeneous branches in their circle of instruction, it was not advisable to divide the faculty into several faculties, was answered by the faculty in March, 1855, unanimously in the negative. They added that if a division should nevertheless take place, the number of new faculties formed should be three, — one for philology, history, and philosophy; one for mathematics and the natural sciences; and one for political science. Without declaring themselves permanently opposed to such a threefold division, the faculty was of the opinion that the introduction into Giessen of such a threefold division before its trial in other faculties was not to be recommended. The senate on the other hand, in May, 1855, recommended by a slight majority the threefold division, referring to the heterogeneity of the different courses of study, and to the importance of the faculty in Giessen, which they thought could well afford to risk making the trial. The recommendation was never responded to by the government.

Almost twenty years later (March, 1874) the rector called upon the philosophical faculty to declare their opinion, whether they thought a division

* Die Gründung der Königlichen Friedrich-Wilhelms-Universität zu Berlin, von Rudolf Köpke. Berlin: 1860.

expedient. The faculty decided (July, 1874) by eleven votes to six in favour of continued union.

The author is indebted to the present rector of the University of Giessen, Professor Lothar Seuffert, for these extracts from the records of the senate and the philosophical faculty.

[4] Address delivered at the opening of the natural science faculty of the University of Tübingen by Hugo von Mohl, Tübingen, 1863.

[5] For more particular information concerning the circumstances under which the separation of the faculty in Tübingen was accomplished, the author had recourse to the present rector of the university, Professor von Thudichum, at whose kind suggestion the dean of the philosophical faculty, Professor E. Herzog, with the utmost kindness took the trouble to communicate the contents of the reports in concise and convenient form.

With the consent of my correspondent this communication is given below: —

"The question of the formation of an independent natural science faculty came up in the summer of 1859, on the occasion of the installation of a new professor of chemistry in the chair of the late Professor Gmelin, while at the same time the assistant professorship of physiological chemistry, already existing, was to be raised to a full professorship. It was on this occasion that a large majority of the medical faculty under the leadership of the botanist Mohl made the proposal to establish at once a special faculty for the natural sciences, and to give the two chemists places in it. According to the arrangement then existing at this university, chemistry, zoölogy, and botany belonged to the medical faculty, mineralogy, physics, and mathematics to the philosophical faculty.

"The following objections to the existing arrangement were raised by Mohl as representative of the medical faculty. The evil effects are, he says, that the instructors in the natural sciences, divided between two faculties, are not empowered to exercise supervision over instruction in these sciences, to determine the subjects upon which lectures are to be delivered, to call attention of the government to weak spots, to watch over the regular resumption of lectures, to bring compulsion to bear upon the hearing of lectures by means of examinations, or to make propositions looking to the filling of vacant chairs and the provision of books. There is further reason to fear that the natural sciences divided between two faculties and in a minority in each will not find the proper recognition of their interests, and therefore it is desired that an independent position worthy of their great impor-

tance be given them in a faculty of their own. Especially is it emphasized as a disadvantage, that the natural science members of the philosophical faculty are dependent in technical questions upon the votes of colleagues who, being unfamiliar with the methods of investigation pursued in the natural sciences, cannot properly appreciate their claims.

"Against this view, within the medical faculty itself, Griesinger, at that time clinical professor (later in Zürich and Berlin), took his stand, and denied in the most decided manner the necessity of a change in the existing plan, and upheld the advantages of precisely such a distribution of subjects as already prevailed at Tübingen. The alleged disadvantages, he declares in a dissenting vote of June 6, 1859, have hitherto made their appearance only in a slight degree or not at all; on the contrary, in a number of cases it proved an advantage that, as in Tübingen, chemistry, botany, and zoölogy should belong to the medical faculty, while the remaining subjects were very well off in the philosophical faculty. In proof of this he mentions opinions on cases of poisoning, the regulation of medical examinations, the position occupied by pharmacists, but especially the necessity of giving medical men control over the chemical, zoölogical, and botanical institutes, in order that there might be no doubt of their care of what was indispensable to the department of medicine. The presence of representatives of the exact sciences, he says, in the philosophical faculty is a great advantage to both parties, and especially to philosophy itself; moreover, philology and history, which are not simply speculative branches, are represented in the philosophical faculty. It would be a substantial disadvantage, however, that the faculty to be newly created would have no students of its own; it would have to borrow its students in the first semester in the main from the medical department; to what purpose, then, should we separate the faculties, if those for whose instruction the faculties exist cannot be separated into corresponding categories? And further, he says, it will be seen that with the addition of this new faculty the organization of the university will become more complicated, much of its business more extended, and the system of examinations more involved; and finally it is to be noted that with this new arrangement we should stand quite alone in Germany. The majority have had to seek an analogy for the proposed change in the Dutch universities, but according to his personal observation of these universities there exists no good reason why their arrangements should be transplanted here. We might rather say that with a natural science faculty by the side of a philosophical faculty we should have something like the French faculty *des sciences* by the side of a faculty *des lettres;* but other, far wider reach-

ing changes in the entire system of instruction would hinge upon the imitation of this organization, and there is just as little reason to imitate the French as the Dutch model.

"Griesinger's view of the matter was supported by the philosophical faculty, and this opposition, as was to be expected, had the result of continuing, at all events for the time being, the existing state of affairs. The newly appointed chemists accordingly were again assigned to the medical faculty, while the general and principal question remained in abeyance. But in the year 1861 a change of government came to the aid of the view held by the Mohl party. The new minister of education, Golther, took up the matter with great zeal, and the struggle began again even much more actively than before. Griesinger, to be sure, had meanwhile left Tübingen, but his dissenting vote exerted an influence nevertheless; and the philosophical faculty, with the exception of the representatives of mineralogy and physics, led with great energy the opposition to the propositions of the medical faculty, and the advocates on both sides expressed themselves in language the meaning of which was in no way doubtful. The majority of the philosophical faculty declared themselves not disinclined to change the existing system. They did not, like Griesinger, wish to hold to the existing division, which had become planless, although in other points they agreed with him; but they wished to adopt the arrangement of other German universities, that is to unite all the branches of natural science; and at that time the senate, which consists with us of all the full professors of all departments, was favourable to this proposal. While the philosophical faculty in this desire found itself upon the same ground with the medical faculty, in so far as it advocated the uniting of all natural science branches, it emphasized all the more their affinity to the whole complex body of preparatory studies for which the philosophical faculty is intended to provide. The natural sciences, they said, had, as it was, more than sufficient inclination to lose sight of their relation to the ideal sciences; no encouragement should be lent to this tendency; one need only read the utterances of the medical faculty on this question, to see what a spirit of misconception reigns in it, indeed a spirit of depreciation of everything not tangible, and which is not concerned with the tangible. The collegiate association of different branches begets, they say, mutual tolerance, and leaves no room for the delusion that only one particular department of knowledge can be justified. They then consider more particularly the several branches which it is proposed to separate from the medical faculty, in order to demonstrate how they can be transferred without injury, and it is further pointed out that if all the natural science branches were included in the

philosophical faculty they would no longer be in a minority. Since the government had also made inquiry regarding the eventual division of the philosophical faculty into two sections, this question is also discussed in detail. Here, however, a split occurred in the majority. Some, reflecting that if two sections should be conceded the concession of complete separation would become more attainable, would have nothing whatever to do with it; they believed this question should be left to the future, and the experiment should be first practically tried whether a united philosophical and natural science faculty would not answer every purpose. The others were more inclined to favour the formation of two sections. With respect to the general organization of the university, however, it was argued specially from our peculiar circumstances that, since forty years before the faculty of political science had separated from the faculties of law and philosophy, and then a catholic theological faculty had been added, there were already six faculties in existence, certainly more than enough; and also that the separation of the political science department had not justified itself, — against which view this department, to be sure, entered a decided protest. Finally, a private letter of Argelander from Bonn, written to the mathematical member of the faculty, was added to the opinion of the faculty for the information of the government. He wrote: —

". . . 'I would give up no one of the outward marks which bear witness to the inward unity of the single departments of knowledge, and as such I regard the grouping in one single faculty of all the different methods of pursuing the truth. Besides that, however, in the interest of our students I hold a division to be in the highest degree injurious. Unfortunately the pursuit of learning is becoming always more and more a matter of bread-winning, and whatever does not serve this purpose is put aside; but nevertheless, through the grouping of all departments of knowledge in one faculty, the old tradition of their inherent connection is preserved at least as regards a number of them. If this is done away with, then the last tie is loosened, and instead of the *universitas litterarum* we shall finally have only schools of specialties. Then farewell to love of knowledge for its own sake, farewell to the humanities.'

"But all these representations were of no avail. The government soon decidedly inclined to the proposition of Mohl, and the senate, which had been before of the other opinion, likewise finally decided by a small majority in favour of a special natural science faculty. The question then alone remained, what subjects and what students should be assigned to the new faculty. In the first respect mathematics caused the only difficulties; the mathematical professor wished at first to remain in the philosophical

faculty, then to belong to both; finally, however, he went into the natural science faculty. As to students, medical students before the *tentamen physicum* and those devoting themselves specially to the natural sciences were assigned to the new faculty, and the students of pharmacy were made *Hospitanten*. This provision of August 5, 1863, went into operation immediately with the winter semester of 1863–64.

"Our natural science faculty has now been in existence seventeen years. How far the injurious consequences which were feared from the separation have actually ensued, I am not in a position to judge; it has recently become manifest that it is less easy for a university with a separate natural science faculty to maintain, against the claims of the *Realschule*, the requirements heretofore in force for attendance at the university. The faculty has taken its place without difficulty in the organization of the university, and the care of the institutes has gained by it."

[6] The formation of a faculty of natural sciences at the University of Tübingen was provided for by the ministry of education and religion in consequence of a decision of His Majesty the King of Württemberg of August 4, 1863 (cf. notes 4 and 5).

[7] Extract from a letter of Professor Adolf Lieben in Vienna: —

"The philosophical department of the Vienna University, as is the case at all the Austrian Universities, is entirely united, and comprises philosophy, philology, history, as well as mathematics and all the natural sciences (except physiology, which is taught in the medical department in connection with anatomy, pathology, etc.). It has no sub-divisions of any kind, and all the more important affairs of the faculty are ultimately deliberated upon and decided in full sessions after preliminary treatment in committees. About seven such sessions take place a year. All current matters are disposed of by the dean on his own responsibility. The number of regular professors in the philosophical faculty is at present forty-two.

"Some two years ago the government propounded the question to us whether a division of the philosophical faculty would not be advantageous. Our answer, adopted by a large majority, was to the effect that we deemed it judicious to abide by the ancient existing arrangement.

"As regards the senate, that body consists of fourteen members, namely, the rector, the prorector, the four deans (that is, of the faculties of theology, law, medicine, and philosophy), the four prodeans, and four elective senators, who are elected to the senate by the four faculties respectively for a term of three years.

"The senate holds its meetings about once a month. Its sphere of influence, however, is actually a somewhat limited one, for all important, and especially all scientific matters are disposed of by the faculties independently. The faculties are also accustomed to communicate through their deans directly with the ministry of public instruction.

"The senate, as the highest academic authority, exercises a general supervision, administers established foundations, distributes scholarships, remuneration to servants, etc., and cares for the common concerns of the university, while in accordance with tradition it refrains from interfering in the affairs of the particular faculties. There is no committee of the senate."

[8] With regard to the very instructive course of events in Breslau, I make the following extract from a letter of Professor Theodor Poleck: —

"In the year 1864 a motion proposed by two professors to establish here in Breslau a faculty of natural sciences in accordance with the example of Tübingen was rejected by the philosophical faculty by a very small majority. The movers thereupon had recourse to the ministry, which likewise declined the proposal, but on the other hand suggested a division of the faculty into sections, such as had existed in Bonn since 1834 (cf. note 16), and desired an expression of opinion from the faculty.

"The consideration of this division into sections occupied the faculty for almost two years in numerous meetings of mixed commissions and of the faculty itself. A great majority of the members of the faculty were in favour of the division into two sections. Many plans of organization were introduced, but when it came to marking off the rights and duties of the two sections, such great differences of opinion appeared, that the plan of the mixed commission did not command a majority. In particular the degree of independence which it was proposed to give to the single sections, over against the collective faculty, found so little favour with the majority that they finally to a great extent lost sight of the purpose of fixing these details of organization through resolutions of the faculty. It was acknowledged by a great majority merely that the existing arrangement of the faculty needed improvement, and that this could be attained by a division into two sections under the same dean.

"These diverging views found expression in several separate votes, which were handed over to the ministry at the same time. The minister then, in the rescript of July 19, 1866, formulated in a number of propositions the conditions under which he would assent to such a division of the faculty.

In these the independence of the single sections was reduced to a very scanty measure. Proposition 4 runs thus: —

"'The dean shall communicate the resolutions of one section to the members of the other section for the purpose of obtaining their vote in writing. Should any resolution of one section be sustained by at least a third of the votes of the other section, then it shall be deemed to be a resolution of the whole faculty. In the contrary case the matter shall be made the subject of advisement in a general faculty meeting, and a vote shall be taken. Should the resolution of the section be in a minority when this vote is taken, then the matter shall be laid before the minister for decision.'

"Under such circumstances the faculty resolved in the same year to dismiss from view the plan of a division and to abide by the existing arrangement.

"In the year 1873 a new motion looking to a division of the faculty was introduced by the dean. It did not get beyond the stage of a thorough deliberation in the faculty, and was then by motion laid upon the table.

"The same fate was experienced by the latest attempt, made last year, which was occasioned by the rejection of two warmly supported candidates for admission as *Privatdocenten* in natural science, who were turned aside solely on the ground that they had graduated at a *Realschule*. There is not now sufficient interest to push the matter further, because under the present circumstances no result can be reckoned upon."

[9] I was interested in making inquiries about the organization of the philosophical faculties of all the universities, and I am especially indebted for kind assistance in obtaining information to L. von Babo in Freiburg, M. Carriere in Munich, P. du Bois-Reymond in Tübingen, F. von Feilitzsch in Greifswald, W. Heintz in Halle, E. Herzog in Tübingen, A. Hilger in Erlangen, O. Jacobsen in Rostock, A. Kekulé in Bonn, H. Kopp in Heidelberg, A. Ladenburg in Kiel, A. Lieben in Vienna, W. Lossen in Königsberg, M. von Pettenkofer in Munich, Th. Poleck in Breslau, E. Reichardt in Jena, J. Volhard in Erlangen, E. Wiedemann in Leipzig, H. Will in Giessen, J. Wislicenus in Würzburg, F. Wöhler in Göttingen, and Th. Zincke in Marburg.

With the exception of Tübingen and Strassburg, the philosophical faculties of all the other universities, namely, Berlin, Bonn, Breslau, Erlangen, Freiburg, Giessen, Göttingen, Greifswald, Halle, Heidelberg, Jena, Kiel, Königsberg, Leipzig, Marburg, Munich, Rostock, and Würzburg, are constituted as units. Mention has already been made of the new organization of the philosophical faculties in Tübingen (cf. *supra*, pp. 10 ff. and

note 5), and in Strassburg (cf. *supra*, p. 12 f. and note 10). Some further facts concerning the organization of the philosophical faculties in Bonn and Leipzig are given below (cf. note 16).

Touching propositions for division, nothing need be added to what has already been said about Giessen, Munich, Würzburg, and Breslau. As regards the remaining universities my inquiries have had the following result: a proposal for a division was made to the minister of instruction by the philosophical faculty in Kiel in the year 1877, but no response from him has yet been received. In the same year Königsberg also made a proposition for a separation into two sections, each with its own dean, but retaining the faculty undivided. It has as yet remained unanswered. On the occasion of the consideration of a new statute of the philosophical faculty in Marburg, likewise in the year 1877, the question of division was also discussed; it was, however, finally decided that the faculty should not be divided. In Bonn, Leipzig, and Freiburg the matter has merely been discussed. In Erlangen, Göttingen, Greifswald, Halle, Heidelberg, Jena, and Rostock no propositions have ever been made up to this time.

[10] A more exact knowledge of the course of events in Strassburg would seem to be of especial interest for the question under discussion.

The following presentation is taken from official documents, an examination of which the author obtained through the kind intervention of the imperial governor of Alsace-Lorraine. A request to that end of August 19, directed to His Excellency, General Fieldmarshal Baron von Manteuffel, was considered by him with the most obliging readiness. As early as September 13, the author received, at the suggestion of the governor, through the under secretary of state, Herr von Pommer-Esche, copies of the following official documents: —

1. Proposition of the philosophical faculty of the Strassburg University looking to a separation into two faculties, addressed to the Imperial Chancellor on February 1, 1873.
2. Argument in support of this proposition on the part of the rector and senate, addressed to President Ledderhose, curator of the University, on March 15, 1873.

From these documents it appears that the establishment of two separate faculties instead of one united faculty had been taken into consideration even at the time of the founding of the university, and had already found expression in the budget for 1872. In view of these facts the philosophical faculty, or as it was then called the faculty of philosophy and the natural

sciences, made on July 2, 1872, a direct proposal to divide the faculty, which was supported by the senate on July 9. The report, however, said that there was some doubt whether such a division should be introduced "at that time and as a provisional arrangement," especially seeing that a considerable minority (6 votes to 10) had declared against it.

Six months later, after the faculty had meanwhile been fully appointed, the question was again taken into consideration, and out of nineteen members sixteen voted for a division; one refrained from voting, and of the two who voted against division only one opposed it on principle, while the other declared himself opposed to division only for the time being, and on grounds of expediency. The proposition went in this shape to the plenary session of the academic instructors, in which, out of the fifty-four persons present, forty-two decided in favour of separation, and eight against it, while three refrained from voting. Under these circumstances the faculty considered itself in duty bound again to propose a division, which accordingly was done on February 1, 1873. The proposal of the faculty was unanimously accepted by the senate, and on March 15 it was further specially advocated by the rector in a letter going thoroughly into the subject.

The reasons for a separation, which the proposal of the faculty sets forth in detail, are grouped together in four paragraphs: —

1. A division is recommended by the absence of affinity between the courses of study represented in the two parts.
2. A division endangers no particular profession.
3. Enumeration of the evils of union.
4. Reference to the example of Tübingen.

[11] Business organization of the philosophical faculty of the Royal Ludwig-Maximilian University of Munich: —

1. The philosophical faculty, in accordance with the ministerial resolutions of May 14, 1865, and September 29, 1873, is divided into two sections, each of which has its special dean.
2. All full professors in these sections are members of the same with the right to vote (known as *Facultisten*).
3. Members of the first section entitled to vote are all *Facultisten* who have charge of special branches in philology, philosophy, or history; to those of the second section belong all those whose departments fall in the domain of the mathematical or natural sciences.

4. All *Facultists* are eligible to the office of dean who have belonged to the faculty exclusively for at least two years, and who have acquired the doctor's degree of the faculty. The deanship changes from one scholastic year to another among those who are eligible in order according to their time of service. The office of dean may be declined. At the close of each scholastic year, each section reports to the senate the name of the dean for the ensuing year. In case of disability the dean is represented by the prodean.

5. In each section its dean has the presidency. The deans are designated as "Dean of the Philosophical Faculty, Section I.," and "Dean of the Philosophical Faculty, Section II."

6. The dean of each section keeps a record of all communications received and documents sent out, and manages the financial affairs of the section. He issues its public announcements, corresponds under the small seal of the faculty, and makes the necessary reports to the senate in the name of the section.

7. Matters which relate exclusively to the philosophical, philogical, and historical, or to the mathematical and natural science courses of study are considered and disposed of by the section concerned; matters on the other hand which concern the general interest of the philosophical faculty are disposed of in the entire faculty. In joint sessions of the faculty, the older of the two deans by date of service takes the chair. Upon him devolves also the management of matters under discussion, and the preparation of resolutions, as well as the opening of all communications addressed to the entire faculty, and their distribution to the sections according to the nature of the subject. Communications which concern the faculty as a body, or are of general interest, if there does not happen to be a general session at the time, are transmitted to both sections in their sessions. In case of inability to act, the older dean in office is represented by the younger.

[12] Respecting the organization of the philosophical faculty of the University of Würzburg, the present rector, Professor Johannes Wislicenus, writes to me: —

"The organization of our philosophical faculty is like that in Munich, that is, we have two sections (one for philosophy, philology, and history, and one for mathematics and the natural sciences); both, however, have together only one dean, who is taken from each by turn.

The common dean takes the presidency in the separate meetings of the two sessions, and even at examinations for the doctor's degree. Our experience however is, it must be admitted, unfavourable to the whole arrangement. The division of the faculty was a half measure. There has been of course no increase in mutual understanding, or in interest for the needs of the other side on the part of the dean. A great evil, and one which a year ago made itself sharply felt, lies in the loss of all influence of the mathematical and natural science section in appointments to the chair of philosophy. Our request to be heard in this matter was simply declined by the sister section without explanation; so that in the senate we had to enter into a certain opposition. We have in fact only the dean, the title of doctor, and the graduation fees in common; otherwise we have become almost more estranged than is well. If there is to be separation, then a radical separation is certainly best. The sectional separation began in the year 1875."

[13] On the Advisability of Establishing Special Faculties of Natural Science, by Professor Dr. P. du Bois-Reymond, *Alma Mater*, Organ für Hochschulen, Dec. 7, 1876.

The author of this paper, which takes up the question in a general way, mentions only in passing the experiments in Tübingen. Speaking of these, he says:

"As far as our university is immediately concerned, it is in some measure protected against the disadvantages which the division of the faculty may entail by the peculiar arrangement of its Great Senate; and consequently in pronouncing upon the question generally we cannot properly use the experiments made in it as a foundation. I must recognize with approval the lessening of the burden of business which falls to the individual instructor. The time which a full professor must expend in attending faculty meetings will be indeed, generally speaking, proportional to the number of members in his faculty. Yet I am able to praise that feature thus almost unreservedly, only because I see how our seven small faculties are by means of the Great Senate swallowed up again, as it were, in a single large faculty uniting all the instructors of the university; whereby, to be sure, the saving of time which I have mentioned may be again put in question. We must look to the arrangement of the Great Senate to find the reason why the fears expressed by Griesinger in his dissenting vote (cf. note 5) and by E. du Bois-Reymond in his rector's address (cf. note 19) have not up to this time been realized with us; while on the other hand also it must be confessed that the great expectations of

H. von Mohl have not so far been fulfilled, but with the exception of a change in the mode of transacting business, everything remains as it was before.

I am, however, decidedly opposed to dividing the philosophical faculty into two parts in universities which do not already possess or cannot introduce a compensation in the Great Senate. I reject this division for reasons similar to those mentioned by E. du Bois-Reymond in his inaugural address, and I shall meet here in a few words the objections which are raised against the principle of integral philosophical faculties."

It is asserted, the author goes on to say, that the principle of the union of the ideal sciences in one faculty is not practicable in the long run because new domains are constantly opening to ideal investigation, and these would then have to be incorporated into this faculty. In this situation would be found, for instance, physiology, which is to-day not less an independent science than physics and chemistry. He says that this objection, however, is weak, because the natural science faculty, if made an offshoot, would also have to be continually enlarged; that meanwhile, in all classifications, it is far easier to set up the principle of division than to define its limits.

The author then speaks of the supposed injuries which are said to accrue to the natural sciences from association with the philosophical sciences. No case is known to him in which the representatives of the natural sciences have been outvoted by the representatives of philosophy. He believes on the contrary that the united faculty will have a clearer perception of the interests of both parts than each part separately would have of its own. The author recognizes the possibility of lightening the burden of business, but sees a natural expedient in the formation of standing or provisional committees. Finally, he sees in the union on principle of the instructors in all the independent sciences the only means of defending the legitimate sphere of the university in the field of higher instruction against the encroachments of the polytechnic schools.

[14] The constitution of the senate varies more or less in the different German universities, and accordingly its sphere of activity is more or less different.

The University of Berlin has a senate, called the Little Senate, consisting of the rector, the university judge, the prorector, the four deans, and five members chosen from the ranks of the full professors. The rector, with the five members last mentioned, is chosen by the assembly of all the full professors by a simple majority vote. The business of the senate consists

in the management of general university affairs, in the distribution of certain scholarships and of wages to functionaries, and finally in the exercise of the academical jurisdiction so far as it still exists.

The senate of the University of Bonn is similarly constituted; there, however, since five faculties are represented by deans, only four additional senators are chosen from the full professors. The manner of election is also the same.

The senate of the University of Breslau consists of fifteen senators. This larger number is occasioned by the circumstance that there are five faculties, and, besides, seven senators are chosen.

The senate of the University of Halle is like that of Berlin in its constitution. Moreover, the General Council still exists, which consists of all the full professors, and receives reports of the transactions of the senate in sessions which are held four times a year. The elections for the senate are also had in this council.

What has been said of Halle applies exactly to Königsberg; likewise to Greifswald and Kiel, except that at the former the senate consists of eleven members, and the general assembly of full professors is called there the Academic Council, while the senate of the latter counts ten members and is called the Academic Consistorium.

The two remaining Prussian universities, Göttingen and Marburg, have the Great Senate, which consists of all full professors. In Göttingen, in addition to the senate, there is the Administrative Committee, which is made up of the prorector, and ex-prorector, a representative of each faculty, and both university councilors. Here the assistant professors also have part in the election of the prorector. In Marburg the University Deputation exercises functions by the side of the senate, and consists of the rector and four members of the senate, one of whom goes out every year, and from whom the rector is chosen.

The new imperial University of Strassburg on the other hand has a Little Senate, which like that of Berlin consists of twelve members, the rector and prorector, the deans of the five faculties, and finally representatives from each of these five faculties.

The majority of the non-Prussian universities have the Little Senate.

Thus the University of Rostock has the *concilium arctius*, which consists of the rector, the ex-rector, the *rector designatus*, and the *assessor perpetuus*. Moreover the *concilium plenum* is still in existence, comprising all the full professors.

The arrangements in Leipzig are coincident with those of Berlin. Besides the rector, the prorector, the deans of the four faculties, and the

full professor of the faculty of law, the senate embraces in addition five elected representatives of the faculties, two of whom are chosen from the philosophical faculty. Moreover, the united body of full professors exercises functions.

The Bavarian universities have partly the Little, partly the Great Senate.

The senate of the University of Munich consists of twelve members, who are elected in general session by the whole body of professors (full and assistant), but in such a manner that four representatives fall to the philosophical faculty, which consists of two sections, and two to each of the four other faculties. The deans are therefore not *eo ipso* members, as at most of the other universities. The senators are chosen for two years; every year half the representation of each faculty is renewed by election. Whoever abstains from the election without sufficient excuse pays a forfeit of three ducats. By the side of the senate, and co-ordinate with it, is the Administrative Committee composed of six members, which has charge of all questions of finance. The University of Munich has a large foundation, establishment, possesses very large forest lands, and needs therefore such an administrative body. The administrative committee makes up the budget every year for the particular departments. The members of the administrative committee are likewise chosen in the general session of full and assistant professors.

The organization of the senate of Würzburg is like that of Munich, only the distribution is somewhat different. The theological faculty sends two, the faculties of law and medicine each three, and the philosophical faculty four representatives to the senate. There is also an Administrative Committee like that in Munich.

Erlangen on the other hand has the Great Senate, to which all the members of the different faculties belong. Every full professor who has delivered his inaugural address is a member of the faculty. By the side of the prorector, who occupies the chair, stands the prochancellor, who votes first in all deliberations in the senate. The prochancellorship changes every two years among members of the law faculty. By the side of the senate is the Administrative Committee, as in Munich and Würzburg, which consists of one member from each of the four faculties, and has the prorector for president. Its members are chosen by the senate; the committee acts independently of the senate. The committee with the aid of delegates of the faculties makes up the university budget, which must be approved however by the senate. For the exercise of the disciplinary power there is a disciplinary committee, which is likewise chosen by the senate.

At the University of Tübingen in Württemberg there is a Great Senate

as in Erlangen, composed of all the full professors who have delivered their inaugural addresses together with the chancellor of the university, the university magistrate (called also *Syndicus*), and a keeper of the records, who has no vote.

In the two universities of Baden, Heidelberg and Freiburg, the arrangements differ. In Heidelberg the authority which represents the university and has the deciding power in most cases is the Lesser Senate, composed of the prorector (the grand duke is rector), the ex-prorector, the four deans, and two full professors chosen from the Great Senate, each for one year. The senate consists of all active full professors (not those on the retired list). To the exclusive jurisdiction of the Great Senate belong the decision of proposals for new regulations and new permanent arrangements (foundation of chairs of instruction, institutes, etc.); other matters may be brought before it, if the Lesser Senate so directs, or if twelve active full regular members make the proposition.

In Freiburg there is, properly speaking, only the Little Senate, in which the rector and ex-prorector sit, and four full professors representing the four faculties. Only important matters affecting the interests of the university come before the whole body of full professors.

It only remains to note that the Hessian University of Giessen possesses (in accordance with the statute of January 1, 1880) an organization just like that of Heidelberg. The Collective Senate, as it is there called, consists of all full professors; the Lesser Senate, of the rector, the ex-rector, the chancellor, and six members to be chosen by the Collective Senate out of its midst for two years, of whom one each belongs to the faculties of theology, law, and medicine, and three to the philosophical faculty.

The University of Jena, finally, has only the Great Senate, consisting of all full professors. Matters of administration as well as those of discipline are the care of special senate committees.

[15] Sur les hautes Études Pratiques dans les Universités Allemandes Rapport présenté á son Exc. le Ministre de l'Instruction publique par M. Adolphe Wurtz, membre de l'Académie des Sciences. Paris: 1870.

Delle Scienze Sperimentali e in particolare della Chimica in Germania. Rilazione rimessa a Sua Excellenza il Ministro della pubblica Istruzione nell' anno 1871 dal Giorgio Roster. Milano: 1872.

Compare also: The Chemical Laboratories of the Universities of Bonn and Berlin. Report addressed to the Right Honourable the Lords of the Committee of Her Majesty's Most Honourable Privy Council on Education by A. W. Hofmann, LL.D., F.R.S. London: 1866.

[16] Concerning the very noteworthy organization of the philosophical faculty in Bonn, Professor Aug. Kekulé writes me the following: —

"The organization of our faculty is in fact still precisely what it was as fixed by the statutes of 1834. The faculty has one dean. It is divided (§ 5) into four divisions or sections, of which each has its president. These four sections are the philosophical, the philogical, one for history and political science, and one for mathematics and the natural sciences. The business of the faculty relates (§ 3) either to general matters (choice of dean, granting of scholarships, distribution of academical honors, etc.) or to special matters, to which belong particularly proposals for filling vacant professorships and for promotion of *Privatdocenten*, and the regulation of prizes.

General matters are decided by the entire faculty in the manner prescribed in § 4. In special matters (§ 7) the members of the section first vote; a sectional decision however cannot be executed without consultation with the faculty. After this consultation, which in important questions (and especially therefore in cases of appointments to be made) always takes place in a full session and on the basis of a written and oral sectional report, the members of the section, likewise in a full session of the faculty, proceed to a final vote. Thus in all special matters only the members of the section concerned have a deciding voice, the remaining members of the faculty have only a consulting voice. The resolution of a section, passed after consultation with the full faculty, has the force of a resolution of the faculty. I have no knowledge of any official proposal ever having been made looking to a change in this arrangement and specifically to a division of the faculty. I am well aware that there has sometimes been talk of it, even in sessions of the faculty, but it would, I think, never have had a majority, and as a matter of fact our arrangement has no serious disadvantages."

The organization of the Leipzig philosophical faculty resembles somewhat that of Bonn. This faculty is, as has been already observed (cf. note 9), a unit; except that three permanent sections have been gradually formed in it: 1. a philological section, 2. a section for history and philosophy, 3. a section for mathematics and the natural sciences. These sections, however, are not divided by a strongly marked line, but in pronouncing opinions on dissertations, and in other such matters, the section immediately concerned often reinforces itself by calling in help from the remaining sections.

[17] Curturgeschichte und Naturwissenschaft. Lecture, delivered on

March 24 before the Society for Lectures on Scientific Subjects in Cologne, by E. du Bois-Reymond. Second edit., p. 42.

[18] In fact, if it were a question of beginning to-day to found universities, no one would think of welding together the philosophical and historical branches and the mathematical and natural science branches in a single faculty. Or is it not agreed that the latter have a much nearer affinity in matter and methods to medicine, a natural science developed toward a special object, than to the branches which are now grouped with them? And that, on the other hand, history and philosophy have many more points of contact with theology and jurisprudence than with the natural sciences? (Proposal of the Philosophical Faculty of the University of Strassburg for a division into two faculties. Cf. note 9.)

[19] The philosophical faculty forms the connecting link between the remaining faculties, . . . if it were split, it might refuse to perform this mediatory service. For it is unmistakable that the connection of the groups into which it would fall asunder would be less close than that of the philosophical group κατ' ἐξοχήν with the faculties of theology and law, or of the natural science group with the faculty of medicine, and a most alarming impulse would be given to the separation of the united university into single special schools, as happened in Paris. The reciprocal action of the different branches of human knowledge which takes place within the philosophical faculty would naturally be lost with its division, but this mutual influence contributes very much to widen the vision of the individual, and to preserve in him a right judgment of his position in relation to the whole. The two divisions of the faculty would finally approach the character of special schools; the ideal stamp of the whole would be destroyed. (E. du Bois-Reymond, Rector's Address, 1869, p. 11.)

[20] It is true also that we cannot dispense with English; and I should be reconciled to losing it in a *Realgymnasium* only on condition of gaining in another direction a substitute for it of greater value. And I take the liberty of expressing still another wish here, which would not be impossible of fulfilment.

I mean instruction in Greek. To have read Homer quickens one's life. The face of a gray-headed public servant, upon which the pencil of time has engraved the unmistakable traces of official monotony, will lighten, if perchance the full-sounding hexameter of the Iliad strikes unexpectedly upon his ear. It is as though his youth sudddenly flickered

up again within him. What the Bible is to the common people, such is in many respects Homer to the educated.

If Greek should be introduced in the upper division of the *Realgymnasium*, then it would take a long step nearer its ideal. In proportion as instruction in Latin receded in importance, Greek might furnish an equivalent in the philological balance of the *Realgymnasium*. And for this price I would willingly drop English as an obligatory branch. The evil would in fact be remedied if a twofold division of pupils in the upper *Gymnasium* were made, one of those who study English and another of those who study Greek. All the remaining branches of instruction might remain the same. This idea is the more feasible, since Class VII. is already divided into two parallel courses.

Should four hours a week for four years be set aside for Greek, it would be easy to bring the pupils to such a point that they could read the Iliad or the Odyssey in the IX. and X. Classes. To be sure it would not do to pursue Greek with the same intent and by the same methods as in the *Gymnasium;* that would of course be impossible, if for no other reason, because of the more advanced age of the pupils. Above all, it would be necessary to give special attention to exegesis, and composition would have to serve principally as an aid to practice in forms and elementary syntax. It is true that the task of those who chose Greek instead of English would be harder. But this assumption of a greater burden would be voluntary, and those who elected Greek would be richly repaid by the pleasure which Homer would some time give them.

I may also mention here this practical advantage, that students intending to study medicine would be able to make their way so much the more easily through the *Realgymnasium*. There is no wish more natural than that they should be able to avail themselves of this means of preparation for their university studies. Is not the *Realgymnasium* as it has just been described peculiarly fitted to be a preparatory school for the study of medicine? But the further exposition of the thought in detail does not belong in this place, and I content myself therefore with having indicated it here. (Dillman, *Program* of the Royal *Realgymnasium* in Stuttgart at the close of the Scholastic Year 1871–72, p. 24.)

[21] The results of the investigation are communicated in a publication entitled "Academic Opinions on the Admission of Graduates of *Realschulen* to the Studies of the University Departments. Berlin: 1870." The following table presents the results in tabular form: —

	Faculty of Theology.		Faculty of Law.	Faculty of Medicine.	Faculty of Philosophy.
Berlin . .	Decided refusal		Decided refusal	Refusal	Decided refusal
	Evangel.	Cathol.			
Bonn . .	Refusal	Decided refusal	Refusal	Refusal	Decided refusal
	Evangel.	Cathol.			
Breslau . .	Refusal	Refusal	Unanimous refusal	Decided refusal	Refusal (by small majority)
Göttingen .	Refusal		Admission	Admission (by small majority)	Conditional admission
Greifswald .	Refusal		Unanimous refusal	Admission	Conditional admission
Halle . .	Refusal		Refusal	Refusal	Conditional admission
Kiel . . .	Refusal		Refusal	Admission	Refusal
Königsberg	Refusal		Admission	Admission	Admission (dissenting vote)
Marburg .	Refusal		Refusal	Refusal (two dissenting votes)	Admission

Of 38 faculties, from which opinions were obtained, 27 voted for refusal, 8 for admission, and 3 for conditional admission.

Arranged according to faculties, the votes stand as follows: —

	Refusal.	Admission.	Conditional.
11 Faculties of Theology	11	0	0
9 Faculties of Law	7	2	0
9 Faculties of Medicine	5	4	0
9 Faculties of Philosophy . . .	4	2	3

If the single universities are compared with one another, we have the following results: —

	Refusal.	Admission.	Conditional admission.
Berlin	4	0	0
Bonn	5	0	0
Breslau	5	0	0
Göttingen	1	2	1
Greifswald	2	1	1
Halle	3	0	1
Kiel	3	1	0
Königsberg	1	3	0
Marburg	3	1	0
	27	8	3

[22] It might seem that the lower grade of training of the *Realschüler* in *one* branch of study would be compensated for by greater proficiency in another. The *Realschule* fixes a higher standard in mathematics certainly, but the end which it attains always depends finally on the personality of the teacher; there are *Gymnasia* which accomplish just as much; and on the whole the start gained by the average *Realschüler*, so far as concerns his ability to acquire the higher mathematics, is insignificant. In regard to the natural sciences, the most notable of our chemists and physicists, as well as the representatives of the other departments, agree that the students from the *Gymnasia* on the average accomplish more. It is the general experience that the foretaste of these sciences obtained in the *Realschule* frequently dulls rather than stimulates eagerness for knowledge. (Opinion of the Berlin Philosophical Faculty. *Vide supra*, p. 40.)

The medical faculty and the mathematical and natural science members of the philosophical faculty have expressed themselves unanimously to the effect that a preparation in the natural sciences acquired at the *Realschule* or elsewhere does not prove so advantageous for the pursuit of corresponding studies at the university as was to be expected. Lack of idealistic impulse, a tradesmanlike narrowness, overrating of knowledge already acquired, above all, indifference to the charm of natural phenomena,—easily outweigh the advantages which might accrue from being early engaged in the observation of nature. (Report of the Rector and Senate of the University of Berlin. Akademische Gutachten, p. 23.)

[23] The teachers in *Realschulen*, because they work for the general education of the higher industrial classes, and must therefore have an appreciation of the demands which their position in life makes upon those who belong to these classes, do not belong to these classes themselves. *Like the Gymnasium teachers, they have to make use of science as a means of education, and should therefore, like them, receive a classical training, that is, be fitted for their profession through the Gymnasium and the university.* (H. Kern, Vierter Jahresbericht über die Louisenstädtische Gewerbeschule zu Berlin, 1869, p. 13.)

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